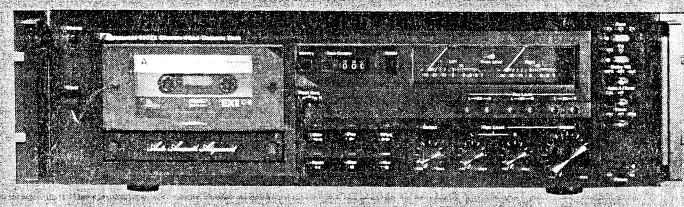
Nakamichi

Service Manual

Nakamichi 660ZX

Discrete Head Cassette Deck



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1.1. Control Functions

Nakamichi 660ZX control functions are shown below:

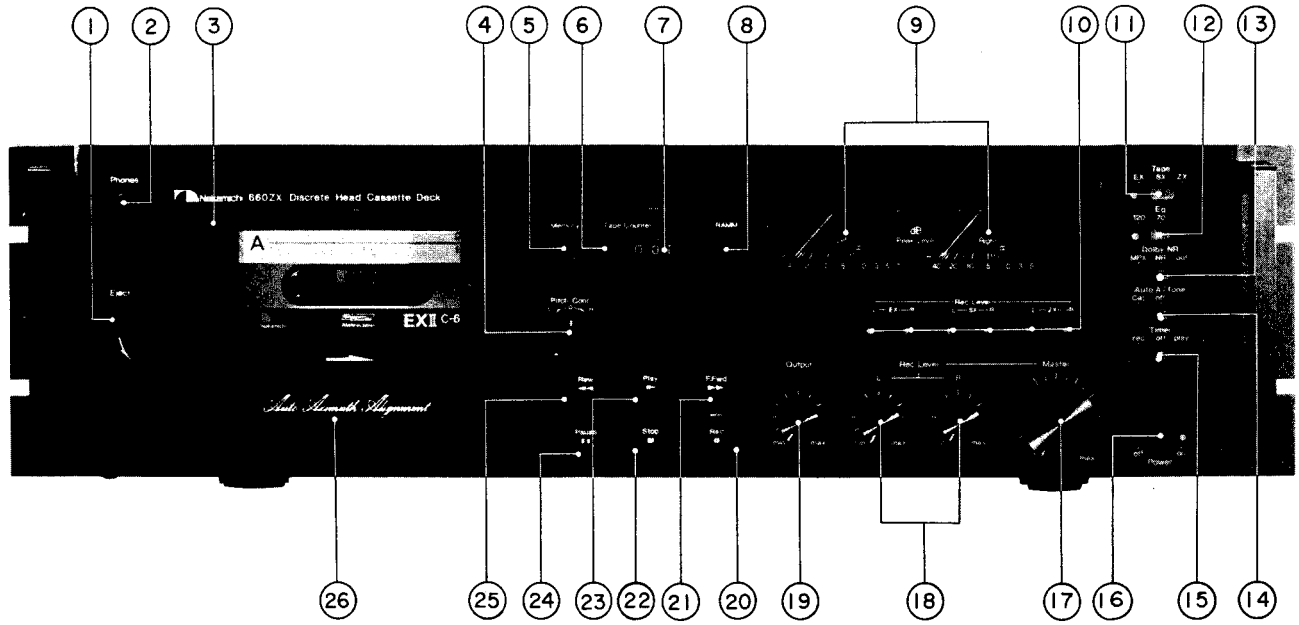


Fig. 1.1 Front View

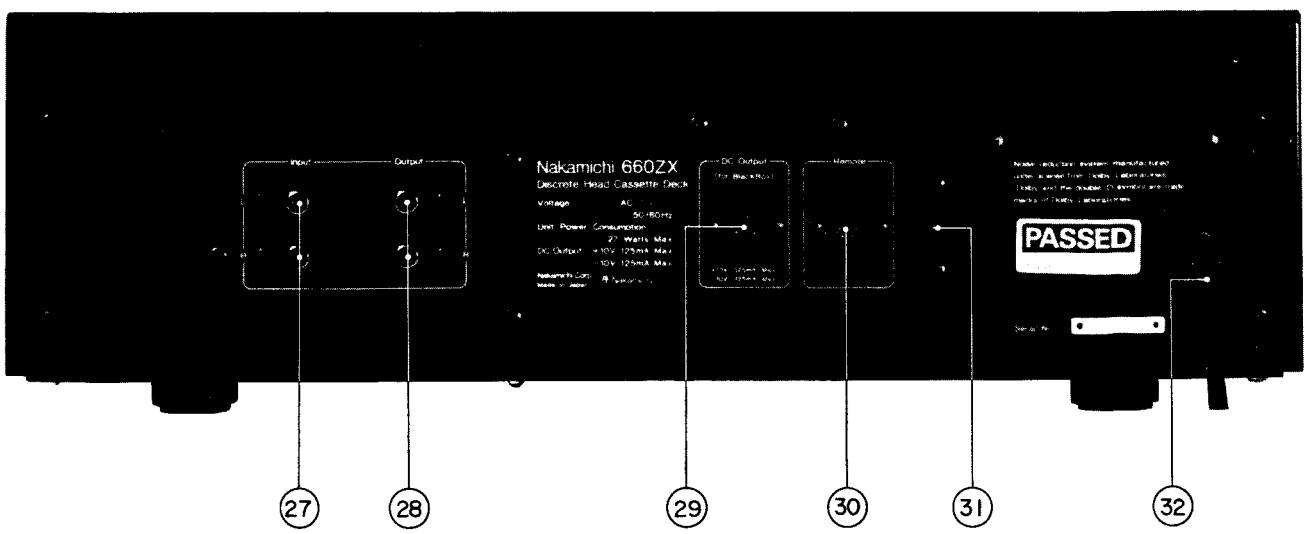


Fig. 1.2 Rear View

1. Eject Lever
2. Headphone Jack
3. Cassette Holder (with see-thru cover)
4. Pitch Control
5. Tape Start Memory Switch
6. Counter Reset Button
7. Tape Counter
8. RAMM Display
9. Peak Level Meters
10. Record Calibration Controls
11. Tape Switch (EX/SX/ZX)
12. Eq. Switch (120 μs/70 μs)
13. Dolby NR/MPX Filter Switch
14. Auto. A/Tone Switch
15. Timer Switch
16. Power Switch
17. Master Input Level Control
18. Input Level Controls
19. Output Level Control
20. Record Button
21. Fast-Forward Button
22. Stop Button
23. Play Button
24. Pause Button
25. Rewind Button
26. Auto Azimuth Alignment Cover
27. Input Jacks
28. Output Jacks
29. DC Output Jack
30. Remote Control Socket
31. Voltage Selector
32. Power Cord

1.2. Voltage Selector

Voltage selector is installed on the rear panel for other versions of the Nakamichi 660ZX.
This voltage selector can select either 120 V or 220 – 240 V at customer's disposal.

2. REMOVAL PROCEDURES

2.1. Side Panel Ass'y

Refer to Fig. 2.1.

Remove F01 and F02, then disassemble F03 (Side Panel Ass'y).

2.2. Top Cover Ass'y

Refer to Fig. 2.1.

(1) Remove Side Panel Ass'y referring to item 2.1.
(2) Remove F04 and F05, then disassemble F06 (Top Cover Ass'y).

2.3. Bottom Cover Ass'y

Refer to Fig. 2.1.

Remove F07, then disassemble F08 (Bottom Cover Ass'y).

2.4. Cassette Case Cover Ass'y and Azimuth Alignment Cover Ass'y

Refer to Fig. 2.1.

(1) Turn fully counterclockwise two screws which are mounted on the Cassette Case Cover, then disassemble F09 (Cassette Case Cover Ass'y).
(2) Turn fully counterclockwise two screws which are mounted on the Front Panel Escutcheon Ass'y, then disassemble F10 (Azimuth Alignment Cover Ass'y).

2.5. Front Panel Ass'y

Refer to Fig. 2.2.

(1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.2 and 2.3.
(2) Pull out F01 (Volume Knob A), F02 (Volume Knob B) and F03 (Pitch Control Knob).
(3) Remove F04, F05 and F06, then disassemble F07 (Front Panel Ass'y including 3 connectors).

2.6. Headphone Jack Ass'y

Refer to Fig. 2.2.

(1) Remove Front Panel Ass'y referring to item 2.5.
(2) Remove F08, then disassemble F09 (Headphone Jack Ass'y).

2.7. Mechanism Ass'y

Refer to Fig. 2.2.

(1) Remove Front Panel Ass'y referring to item 2.5.
(2) Remove F10, then disassemble F11 (Mechanism Ass'y including 7 connectors).

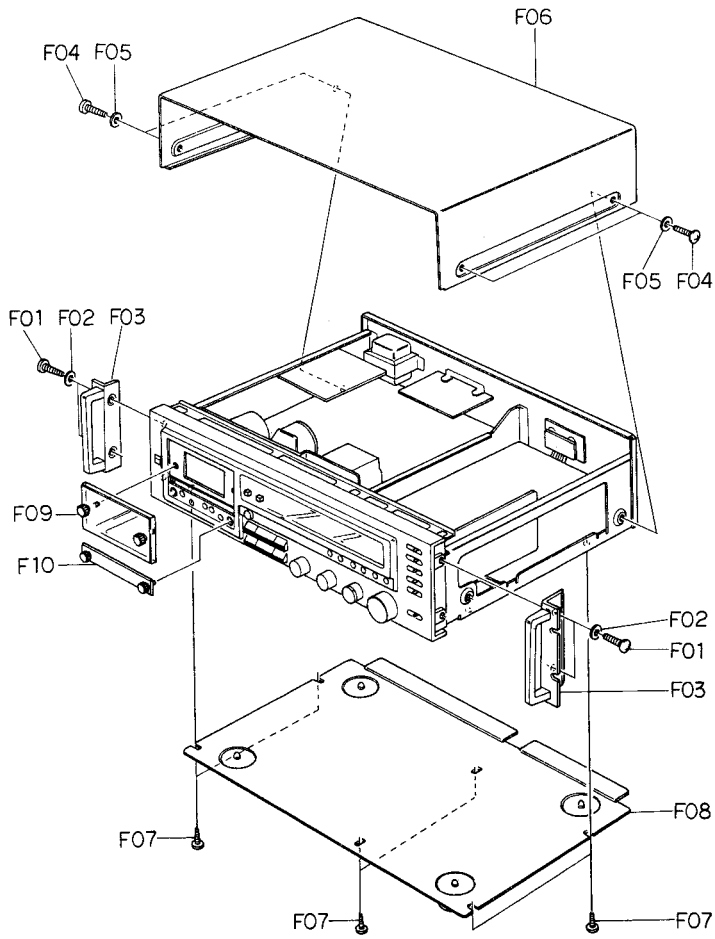


Fig. 2.1

2.8. Level Meter
Refer to Fig. 2.3.
(1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
(2) Remove F01, then disassemble F02 (Level Meter Holder) and F03 (Level Meter).

2.9. Auto Azimuth P.C.B. Ass'y
Refer to Fig. 2.3.
(1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
(2) Remove one connector and the wires connected by wrapping.
(3) Remove F04, then disassemble F05 (Auto Azimuth P.C.B. Ass'y).

2.10. Logic P.C.B. Ass'y
Refer to Fig. 2.3.
(1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
(2) Remove 7 connectors and the wires connected by wrapping from F07 (Logic P.C.B. Ass'y).
(3) Remove F06, then disassemble F07 (Logic P.C.B. Ass'y).

2.11. Switch P.C.B. Ass'y
Refer to Fig. 2.3.
(1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
(2) Pull out F08 (Function Switch Knob Ass'y).
(3) Remove the Flat Cables, connector and wires connected by wrapping from F11 (Switch P.C.B. Ass'y).
(4) Remove F09 and F10, then disassemble F11 (Switch P.C.B. Ass'y).

2.12. Main P.C.B. Ass'y
Refer to Fig. 2.3.
(1) Remove Level Meter and Switch P.C.B. Ass'y referring to items 2.8 and 2.11.
(2) Remove the Flat Cables, 3 connectors and wires connected by wrapping from F13 (Main P.C.B. Ass'y).
(3) Remove F12, then disassemble F13 (Main P.C.B. Ass'y).

2.13. Volume P.C.B. Ass'y
Refer to Fig. 2.3.
(1) Remove Level Meter referring to item 2.8.
(2) Remove F14 and the Flat Cable from F15 (Volume P.C.B. Ass'y), then disassemble F15 (Volume P.C.B. Ass'y).

2.14. Record Cal. P.C.B. Ass'y
Refer to Fig. 2.3.
(1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
(2) Remove F16, then disassemble F17 (Calibration Case Ass'y).
(3) Remove F18, then disassemble F19 (Record Cal. P.C.B. Ass'y).

2.15. Power Switch
Refer to Fig. 2.3.
(1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
(2) Remove F20, then disassemble F21 (Power Switch Knob).
(3) Remove F22, then disassemble F23 (Power Switch Holder Ass'y).
(4) Remove F24, then disassemble F25 (Power Switch).

2.16. Lamp P.C.B. B Ass'y and Lamp P.C.B. C Ass'y
Refer to Fig. 2.3.
(1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
(2) Remove F26, then disassemble F27 (Insulator) and F28 (Lamp P.C.B. B Ass'y).
(3) Remove F29 (Lamp P.C.B. C Ass'y) by releasing the self-interlocking pin of the Reflector.

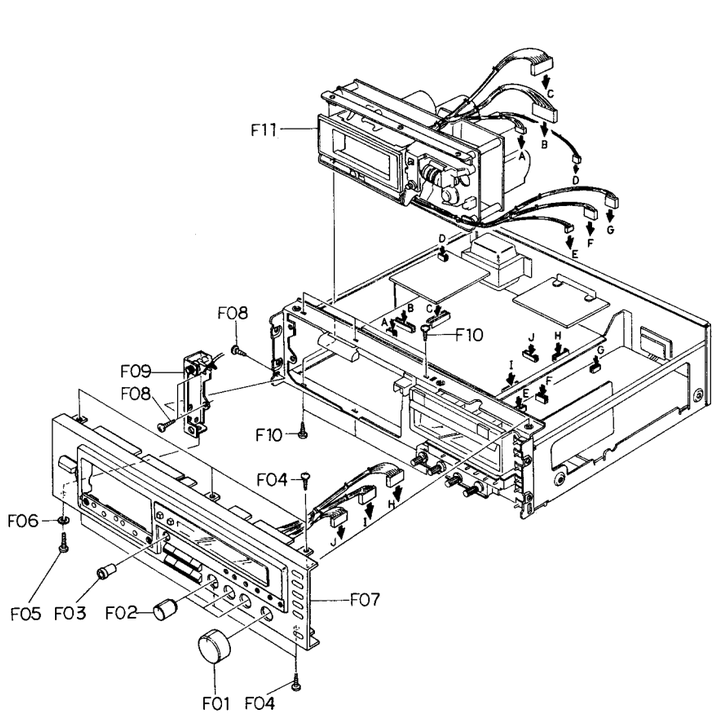


Fig. 2.2

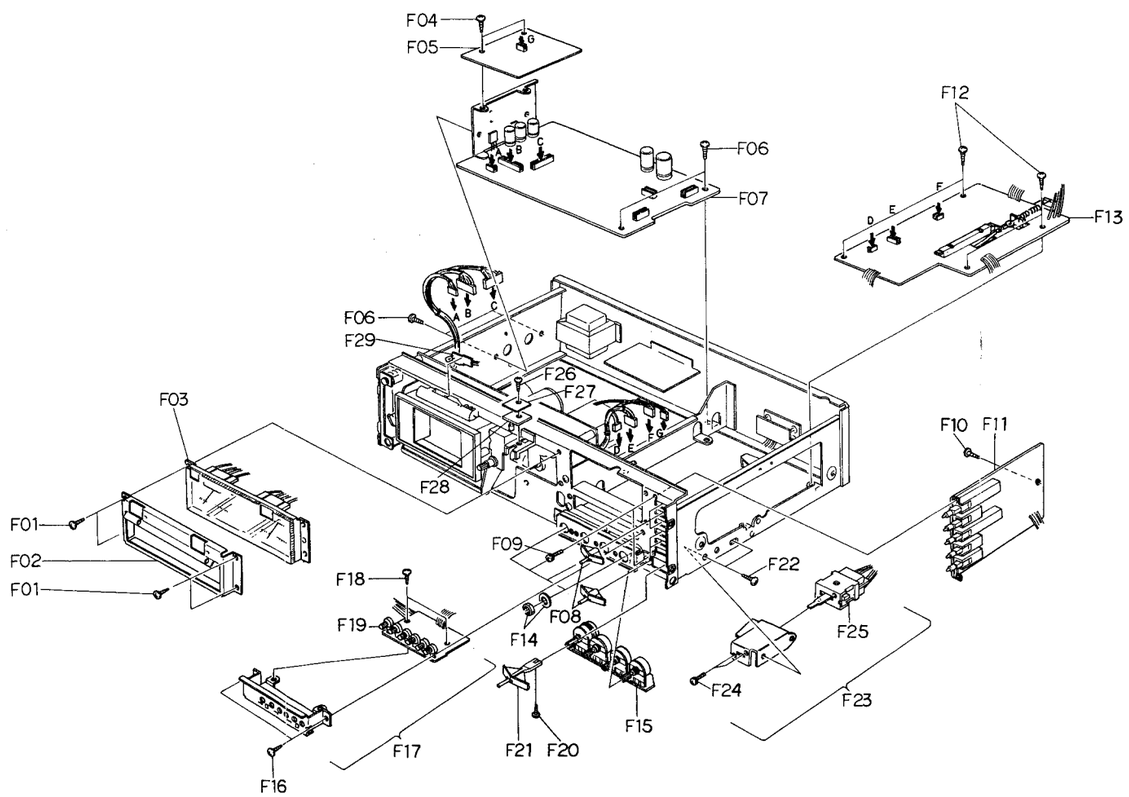


Fig. 2.3

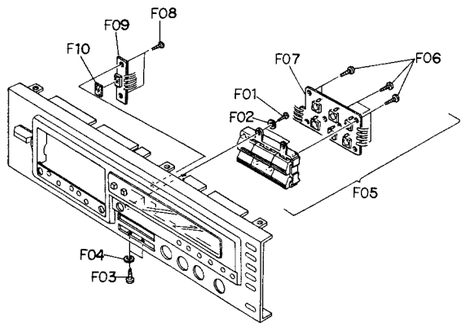


Fig. 2.4

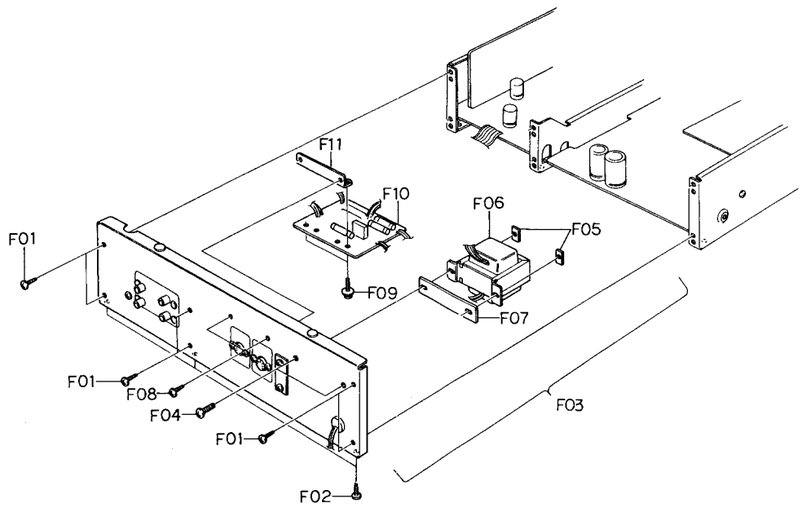


Fig. 2.5

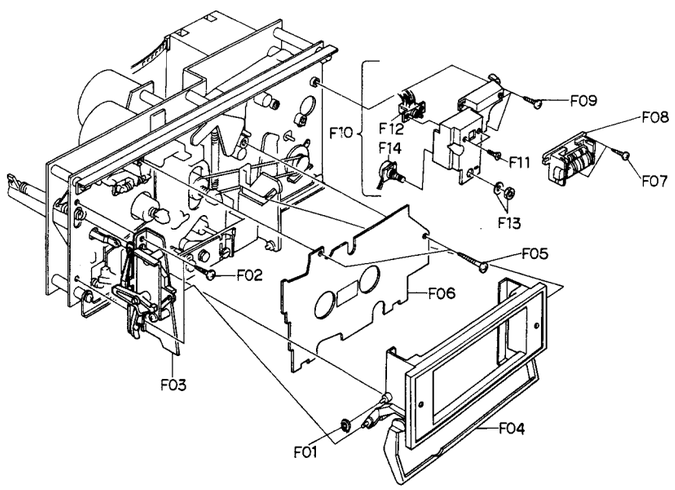


Fig. 2.6

2.17. Control Switch P.C.B. Ass'y

Refer to Fig. 2.4.

(1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
(2) Remove F01, F02, F03 and F04, then disassemble F05 (Control Button Ass'y).
(3) Remove F06, then disassemble F07 (Control Switch P.C.B. Ass'y).

2.18. RAMM P.C.B. Ass'y

Refer to Fig. 2.4.

(1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
(2) Remove F08, then disassemble F09 (RAMM P.C.B. Ass'y) and F10 (LED Filter).

2.19. Rear Panel Ass'y

Refer to Fig. 2.5.

(1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.2 and 2.3.
(2) Remove F01 and F02, then disassemble F03 (Rear Panel Ass'y).

2.20. Power Transformer and Fuse P.C.B. Ass'y

Refer to Fig. 2.5.

(1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.2 and 2.3.
(2) Remove F04 and F05, then disassemble F06 (Power Transformer) and F07 (Transformer Plate).
(3) Remove F08 and F09, then disassemble F10 (Fuse P.C.B. Ass'y).

2.21. Cassette Case Ass'y and Cover Plate Ass'y

Refer to Fig. 2.6.

(1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.7.
(2) Press the Eject Button to open the Cassette Case Ass'y.
(3) Remove F01 and F02, then disassemble F03 (Cassette Case Holder L Ass'y) by releasing the self-interlocking pin of the Damper Lock Arm and F04 (Cassette Case Ass'y).
(4) Remove F05, then disassemble F06 (Cover Plate Ass'y).

2.22. Tape Counter Ass'y, Memory Switch and Pitch Control Volume

Refer to Fig. 2.6.

(1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.7.
(2) Remove F07, then disassemble F08 (Tape Counter Ass'y).
(3) Remove F09, then disassemble F10 (Pitch Control Holder Ass'y).
(4) Remove F11, then disassemble F12 (Memory Switch).
(5) Remove F13, then disassemble F14 (Pitch Control Volume).

2.23. Capstan Motor Ass'y and Flywheel Ass'y

Refer to Fig. 2.7.

(1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.7.
(2) Remove F01 and F02, then disassemble F03 (Flywheel Holder Ass'y) and F08 (Capstan Belt).
(3) Remove F04, then disassemble F05 (Capstan Motor Ass'y).
(4) Remove F06, then disassemble F07 (Speed Cal. P.C.B. Ass'y).
(5) Remove F09 (Supply Flywheel Ass'y), then disassemble F10 (Take-up Flywheel Ass'y).
(6) After removing both Flywheel Assemblies, disassemble F11 (Thrust Washer 3 mm), F12 (Thrust Washer 2.6 mm), F13 (Flange Thrust Cap) and F14 (Thrust Spring).

2.24. Sub Mechanism Chassis Ass'y

Refer to Fig. 2.8.

(1) Remove Flywheel Holder Ass'y referring to item 2.23.
(2) Remove F01 and F02, then disassemble F03 (Sub Mechanism Chassis Ass'y).

2.25. Control Motor Ass'y and Reel Motor Ass'y

Refer to Fig. 2.8.

(1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
(2) Remove F04, then disassemble F05 (Control Motor Ass'y).
(3) Remove F06, then disassemble F07 (Reel Motor Ass'y).

2.26. Cam Control Volume

Refer to Fig. 2.8.

(1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
(2) Remove F08, then disassemble F09 (Volume Coupler).
(3) Remove F10, then disassemble F11 (Cam Control Volume).

2.27. Azimuth Motor Ass'y

Refer to Fig. 2.8.

(1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
(2) Remove F12, then disassemble F13 (Azimuth Alignment Motor Ass'y).
(3) Remove F14, then disassemble F15 (Azimuth Motor Ass'y) and F16 (Drive Pulley Ass'y).

2.28. Reel Hub Ass'y and Idler Ass'y

Refer to Fig. 2.8.

(1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
(2) Remove F17 (Reel Hub Head), then disassemble F18 (Reel Hub B Ass'y), F19 (Reel Hub Take-up Ass'y), F20 (Reel Hub Supply Ass'y), F21 (Back Tension Ass'y) and F22 (Back Tension Spring).
(3) Remove F23, then disassemble F24 (Idler Ass'y).

2.29. Cam Drive Gear and Control Cam

Refer to Fig. 2.8.

(1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
(2) Remove F25, then disassemble F26 (Cam Drive Gear).
(3) Remove F27, then disassemble F28 (Counter-Load Arm Ass'y).
(4) Remove F29, then disassemble F30 (Control Cam).

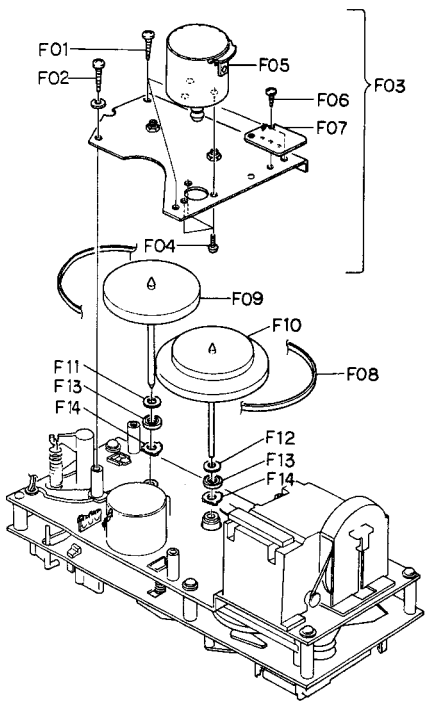


Fig. 2.7

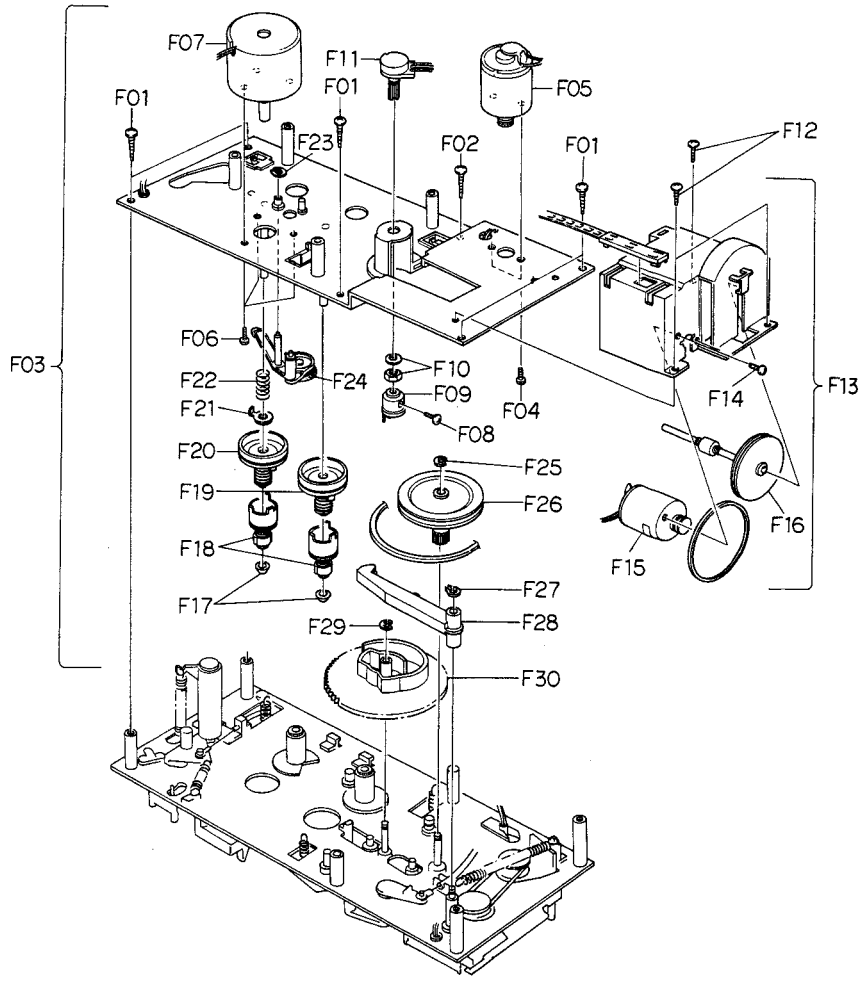


Fig. 2.8

2.30. Head Mount Base Ass'y

Refer to Fig. 2.9.

(1) Refer to Fig. 2.6. Remove Cassette Case Ass'y referring to item 2.21.
(2) Remove F01, then disassemble F02 (Head Mount Base Ass'y).

2.31. Pressure Roller Ass'y and Erase Head

Refer to Fig. 2.9.

(1) Remove Head Mount Base Ass'y referring to item 2.30.
(2) Remove F03, then disassemble F04 (Supply Pressure Roller Ass'y).
(3) Remove F05, then disassemble F06 (Erase Head).
(4) Remove F07, then disassemble F08 (Take-up Pressure Roller Ass'y).

2.32. Playback Head Ass'y and Record Head Ass'y

Refer to Fig. 2.9.

(1) Remove Head Mount Base Ass'y referring to item 2.30.
(2) Turn F09 by 90° by pushing it, then disassemble F10 (Playback Head Ass'y).
(3) Turn F10 by 90° by pushing it, then disassemble F12 (Record Head Ass'y) and F13 (RH Azimuth Alignment Plate).

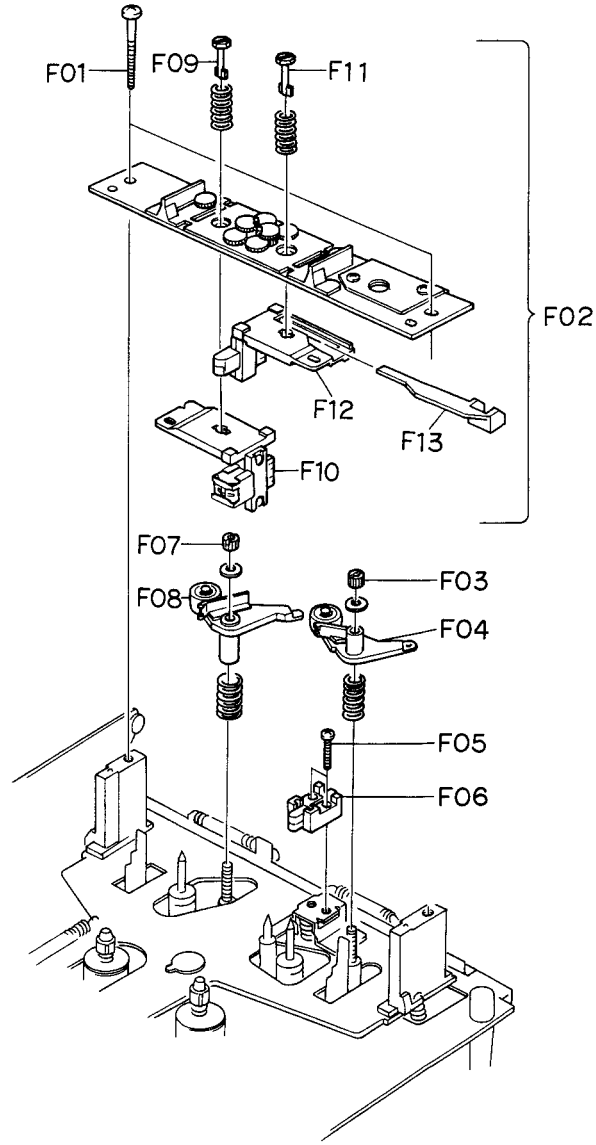


Fig. 2.9

3. MEASUREMENT INSTRUMENTS

(1) Audio Generator (20 Hz – 200 kHz)
(2) AC Millivolt Meter (with dB measures)
(3) Oscilloscope (DC – 5 MHz)
(4) Distortion Meter
(5) Speed & Wow/Flutter Meter
(6) Frequency Counter (DC – 1 MHz)
(7) Ohm Meter
(8) DC Volt Meter
(9) AC Volt Meter
(10) Torque Gauge (DA09013A)
(11) 15 kHz Azimuth Tape (DA09004A)
(12) 3 kHz Speed & Wow/Flutter Tape (DA09006A)
(13) 1 kHz Track Alignment Tape (DA09007A)
(14) 400 Hz Level Tape (DA09005A)
(15) 20 kHz PB Frequency Response Tape (DA09001A)
(16) 15 kHz PB Frequency Response Tape (DA09002A)
(17) 10 kHz PB Frequency Response Tape (DA09003A)
(18) Reference EXII Tape (DA09021A)
(19) Reference SX Tape (DA09025A)
(20) Reference ZX Tape (DA09037A)
(21) Tilt Check Gauge M-9039 (DA09039A)
(22) EH Tilt Check Gauge M-9040 (DA09040A)
(23) EH Stroke Check Gauge M-9042 (DA09042A)
(24) EH Stroke Check Gauge M-9051 (DA09051A)
(25) Stroke Check Gauge M-9047 (DA09047A)
(26) Record Head Mounting Gauge M-9048 (DA09048A)
(27) Back Tension Gauge (DA09055A)
(28) Tension Arm Adjustment Cassette (DA09056A)
(29) Audio Analyzer T-100
(including Distortion, Wow/Flutter, Speed, Oscillator and dB meter)

Notes: 1. (10) – (29) are the products of Nakamichi Corporation.
2. EH Stroke Check Gauge M-9042 (DA09042A) should be used for the Models serial Nos. from A30701001 to A30702750, and EH Stroke Check Gauge M-9051 (DA09051A) is for the Models bearing serial Nos. A30702751 and greater.
3. Back Tension Gauge (DA09055A) and Tension Arm Adjustment Cassette (DA09056A) are used for the Models bearing serial Nos. A30704141 and greater.

4. MECHANICAL ADJUSTMENTS

4.1. Mechanism Control Cam Adjustment

Before adjustment, disassemble the Front Panel Ass'y, then remove the Cover Plate Ass'y referring to items 2.5 and 2.21.

(1) Offset Adjustment of Control Motor Driver

(a) Refer to Figs. 4.1 and 4.2.
Adjust VR402 and VR403 on the Logic P.C.B. to locate approximately at the middle of the variable range. Then turn ON the Power Switch.
VR402 (for Cam Position Stop)
VR403 (for Cam Position Play)

(b) Press the Stop Switch to set the N-660ZX in stop mode.
Adjust VR402 (for Stop) so that the "S" mark on the Cam corresponds to the pointer on the mechanism chassis.

(c) Press the Play Switch to set the N-660ZX in playback mode.
(Cam will rotate, and the position marked with "PY" comes to the pointer.)
Adjust VR403 (for Play) so that the "PY" mark on the Cam corresponds to the pointer.

(d) Repeat above (b) and (c) 2 – 3 times so that the "S" and "PY" marks on the Cam correspond to pointer accurately in stop and playback modes respectively. (This adjustment is required because the position adjusted by one volume will be slightly changed when the other volume is adjusted.)

(e) Set the N-660ZX in FF, pause, record, or cue mode by pressing each switch (press FF and Pause Switches to set the N-660ZX in cue mode) and check to insure that the pointer is in a range of "F", "PS", "R", or "CU" mark respectively.

(f) If out of the range, precise adjustment for each position according to "(2) Offset Fine Adjustment of Control Motor Driver" will be required.

(2) Offset Fine Adjustment of Control Motor Driver

Adjust only if a satisfactory result is not obtained in "(1) Offset Adjustment of Control Motor Driver".
This adjustment is made by changing the value of the fixed resistors on the Logic P.C.B. (Note: The value of voltage is typical value.)

(a) Observation Point of Reference Voltage

Observe the each voltage at the sliding contact of the Cam Control Volume VR405 (10 kΩ) in stop, fast (FF or REW), pause, record and playback modes.

Note: When Record and Play Switches are pressed to set N-660ZX in record mode, the Cam is first set to the record position in a short period of time then stays at the play position. Therefore to keep the Cam at the record position, following procedure is required:
Short the both leads of capacitor C450 (4.7 μF 25 V) on the Logic P.C.B. with a jumper wire, then press the Record and Play Switches.

(b) Reference Voltage

Reference voltage at the sliding contact of VR405 (Cam Control Volume) in each mode is as follows:

Mode	Reference Voltage (Typical Value)	
Record	4.1 V	1.1 V +0.4 V -0.2 V
Stop	3.0 V	1.7 V ±0.25 V
Fast (FF/REW)	1.3 V	
Pause	-2.8 V	2.6 V ±0.4 V
Play	-5.4 V	

(c) Resistors for Adjustment

Mode	Ref. No.	Typical Value
Stop	R461	9.1 kΩ (F)
Fast (FF/REW)	R462	4.32 kΩ (F)
Pause	R445	287 kΩ (F)
Play	R443	174 kΩ (F)
Record	R601	27 kΩ

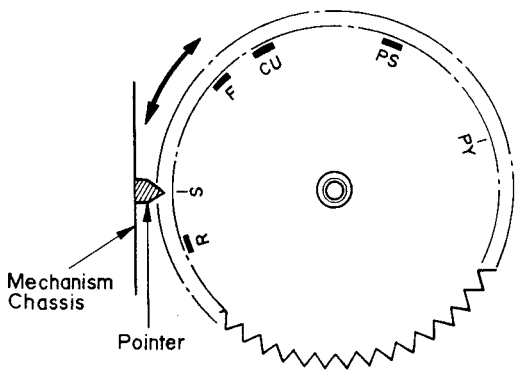


Fig. 4.1

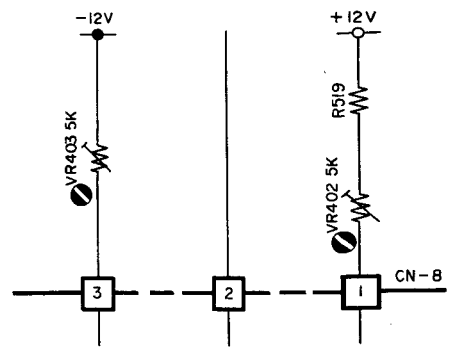


Fig. 4.2

(d) Adjustment Procedures

1) Press the Stop Switch to set the N-660ZX in stop mode.
   Adjust the value of R461 to obtain 3.0 V (±0.6 V) at the sliding contact of VR405.
   Note: When R461 is adjusted, the reference voltage in fast (FF or REW) mode is changed. Therefore, re-check of the reference voltage in fast (FF or REW) mode is required.
   If the reference voltage is out of the range, re-adjustment of R462 according to next step 2) is necessary.
2) Set the N-660ZX in FF mode, then adjust the value of R462 so that the voltage of VR405 will become lower by 1.7 V (±0.25 V) than in stop mode.
3) Press the Pause Switch to set the N-660ZX in pause mode.
   Adjust the value of R445 to obtain −2.8 V (+0.4, -0.15 V) at the sliding contact of VR405.
4) Set the N-660ZX in playback mode, then adjust the value of R443 so that the voltage of VR405 will become lower by 2.6 V (±0.4 V) than in pause mode.
5) Short the both leads of capacitor C450 with a jumper wire.
   Set the N-660ZX in record mode, then adjust the value of R601 so that the voltage of VR405 will become higher by 1.1 V (+0.4, -0.2 V) than in stop mode.
   Note: Remove the short of C450 after completion of adjustment.

(3) Cam Timing Adjustment

(a) Remove the wires from the Control Motor Terminals to set the motor open.
(b) Without loading a cassette tape and with pressing the Record Protecting Switch with your finger tip, press the Record and Play Switches to set the N-660ZX in record mode.
(c) Turn the Cam and bring the "PY" mark toward the pointer by hand.
   Reel Motor will rotate before the "PY" mark reaches the pointer. Adjust the value of R483 and R484 so that the voltage at the sliding contact of VR405 becomes −3.6 V (±0.3 V) when Reel Motor starts rotation.
(d) Observe the mute signal at the Q418 collector.
   Turn the Cam referring to above step (c) and check to insure that the voltage at the sliding contact of VR405 is −3.8 V (±0.3 V) when mute is released (mute signal changes from H to L). (This voltage is determined by the adjustment of R483 and R484 in above step (c).)
(e) Observe the $\overline{\text{Rec.}}$ signal at the Q417 collector.
   Turn the Cam referring to above step (c) and adjust the value of R488 to obtain −2.1 V (±0.4 V) at the sliding contact of VR405 when $\overline{\text{Rec.}}$ signal changes from H to L (bias oscillation will begin).
(f) Upon completion of above adjustment, re-connect wires to the motor terminals.

4.2. Tape Speed Adjustment

(1) Remove the Top Cover.
(2) Connect a Frequency Counter to the Output Jack.
(3) Load a 3 kHz Speed Wow/Flutter Tape (DA09006A) and play it back.
(4) Referring to Fig. 4.3, adjust the Tape Speed Adjustment Volume VR407 on the Speed Cal. P.C.B. to obtain 3,000 Hz on the Frequency Counter.
   CCW: Motor drives slowly.
   CW: Motor drives fast.

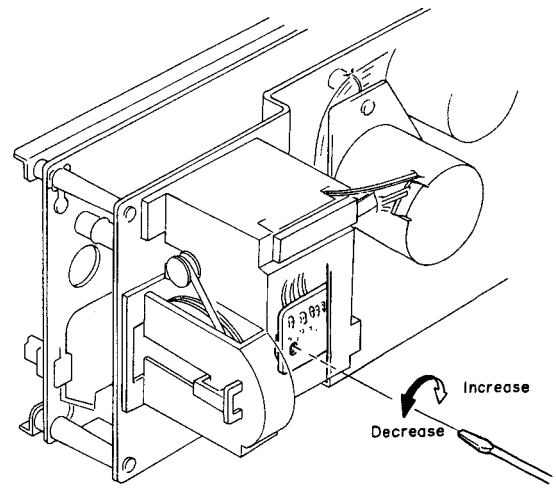


Fig. 4.3

4.3. Record Head and Playback Head Tilt Adjustment

Note: On items 4.3 – 4.9, please refer to Fig. 4.4 flow chart.

Refer to Figs. 4.5 and 4.6.

(1) Load a Tilt Check Gauge M-9039 (DA09039A) in the N-660ZX.

(2) Clip the grounding terminal of the Tilt Check Gauge with one end of the cord with clip, and the other end to the chassis of the N-660ZX.

(3) Remove both of the Height Gears.

(4) Set the N-660ZX in play mode. Check to insure whether the Beacons Playback Head "Upper" or "Lower" and Record Head "Upper" or "Lower" are illuminating. In order not to give damages onto the head surfaces, push both of slide knobs of the Gauge to the direction of arrow marks, then return it to the original place to be in contact with record head and playback head surfaces after play mode is securely locked.

(5) Check to insure freedom from contact between the Gauge and pad lifter.

(6) Beacon Playback Head "Lower" will light on when height adjustment screw (P) turned clockwise but Playback Head "Upper" when counterclockwise. Adjust so that both "Upper" and "Lower" will light on even when you move the slide knob to the direction of an arrow mark and then return it to the original place.

(7) Same procedures will apply to the Beacons Record Head "Upper" and "Lower", except for the height adjustment screw (R).

(8) Set the N-660ZX in stop mode and fit both of the serrated height gears. Then set the N-660ZX again in play mode and insure all of the 4 Beacons are illuminating. If not, (3) through (7) will have to be repeated till satisfactory results are obtained.

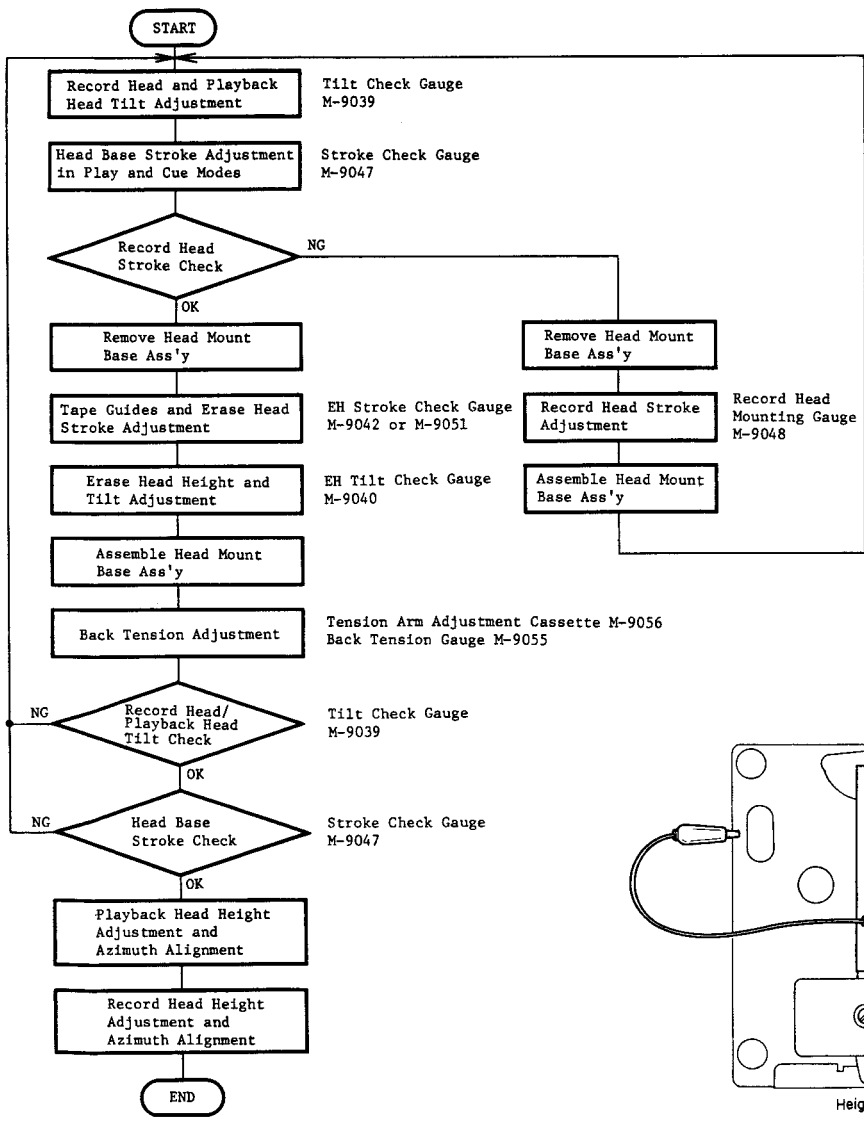

START
Record Head and Playback Head Tilt Adjustment
Tilt Check Gauge M-9039
Head Base Stroke Adjustment in Play and Cue Modes
Stroke Check Gauge M-9047
Record Head Stroke Check
NG
OK
Remove Head Mount Base Ass'y
Tape Guides and Erase Head Stroke Adjustment
EH Stroke Check Gauge M-9042 or M-9051
Erase Head Height and Tilt Adjustment
EH Tilt Check Gauge M-9040
Assemble Head Mount Base Ass'y
Remove Head Mount Base Ass'y
Record Head Stroke Adjustment
Record Head Mounting Gauge M-9048
Assemble Head Mount Base Ass'y
Back Tension Adjustment
Tension Arm Adjustment Cassette M-9056
Back Tension Gauge M-9055
NG
Record Head/ Playback Head Tilt Check
Tilt Check Gauge M-9039
OK
NG
Head Base Stroke Check
Stroke Check Gauge M-9047
OK
Playback Head Height Adjustment and Azimuth Alignment
Record Head Height Adjustment and Azimuth Alignment
END

Fig. 4.4

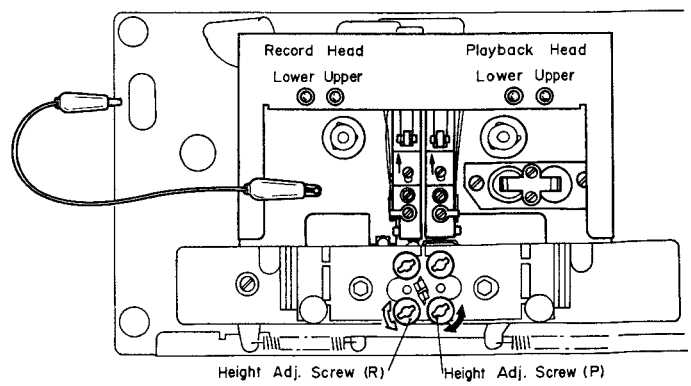


Fig. 4.5

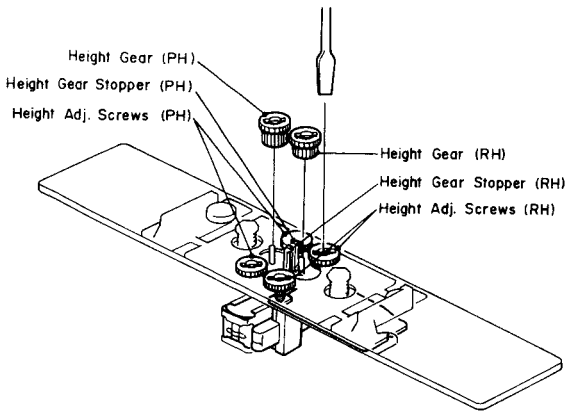


Fig. 4.6

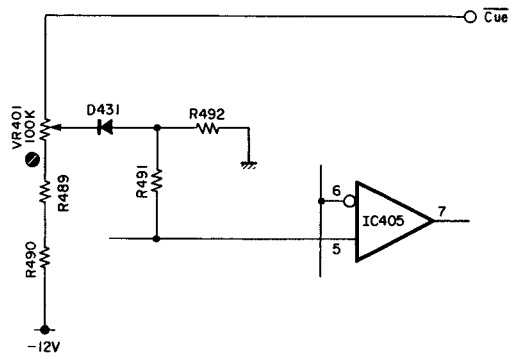


Fig. 4.8

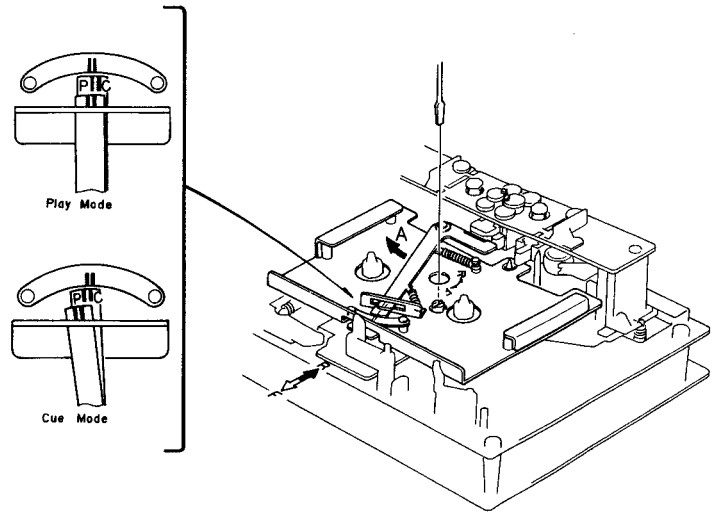


Fig. 4.7

4.4. Head Base Stroke Adjustment in Play and Cue Modes

Note: Before you conduct this adjustment, adjust with a "Tilt Check Gauge" to insure freedom from tilt on the playback head and record head.

(1) Head Base Stroke Adjustment in Play Mode

Refer to Fig. 4.7.

(a) Load a Stroke Check Gauge M-9047 (DA09047A) in the N-660ZX.

(b) Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-660ZX in play mode.
Then slowly release the Indicators and insure whether each of the Indicators is in contact with record and playback heads.

(c) Check to insure whether the "P" pointer on the Playback Head Indicator locates between the 2 lines on the Indicator Plate.

(d) If the playback head stroke is noted to be misaligned, adjustment can be made by moving the stroke adjuster assembled in the head base assembly (either forwardly or backwardly).

(e) Check to insure whether the "P" pointer on the Playback Head Indicator locates between the 2 lines on the Record Head Indicator, thus check can be made on record head stroke.

(f) If the record head stroke is noted to be misaligned, adjustment can be made with a Record Head Mounting Gauge M-9048 (DA09048A).

(2) Head Base Stroke Adjustment in Cue Mode

Refer to Fig. 4.8.

(a) Load a Stroke Check Gauge M-9047 (DA09047A) in the N-660ZX.

(b) Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-660ZX in cue mode (F.F. and Pause).
Then slowly release the Indicators and insure whether each of the Indicators is in contact with record and playback heads.

(c) Check to insure whether the "C" pointer on the Playback Head Indicator locates between the 2 lines on the Indicator Plate.

(d) If the playback head stroke is noted to be misaligned, adjust VR401 on the Logic P.C.B. Ass'y till satisfactory results are obtained.

(e) After completion of the Head Base Stroke Adjustment, check to insure accuracy of the Head Base Stroke Adjustment in play mode.
If the above are inaccurate, items (1) and (2) will have to be repeated till satisfactory results are obtained.

4.5. Tape Guides Adjustment and Erase Head Stroke Adjustment

Remove Head Mount Base Ass'y referring to item 2.30. Refer to Figs. 4.9 and 4.10.

(1) Supply Tape Guide Height Adjustment

(a) Load an EH Stroke Check Gauge M-9042/M-9051 in the N-660ZX.
(b) Set the N-660ZX in play mode.
(c) Slide the Supply Tape Guide Check Bar down against the supply tape guide, thus check can be made on supply tape guide height.
(d) If the supply tape guide is misaligned, the Supply Tape Guide Check Bar will not come into the supply tape guide. If such is noted, turn to adjust the height adjustment nut A till the Supply Tape Guide Check Bar is accepted by the supply tape guide.
(e) If the above are insured, set the N-660ZX in pause mode, then in play mode to see whether adjustments are appropriately made. If not, (b) through (e) will have to be repeated till satisfactory results are obtained.

(2) Take-up Tape Guide Height Adjustment

(a) Load an EH Stroke Check Gauge M-9042/M-9051 in the N-660ZX.
(b) Set the N-660ZX in play mode.
(c) Slide the Take-up Tape Guide Check Bar down against the take-up tape guide, thus check can be made on take-up tape guide height.
(d) If the take-up tape guide is misaligned, the Take-up Tape Guide Check Bar will not come into the take-up tape guide. If such is noted, turn to adjust the height adjustment nut B till the Take-up Tape Guide Check Bar is accepted by the take-up tape guide.
(e) If the above are insured, set the N-660ZX in pause mode, then in play mode to see whether adjustments are appropriately made. If not, (b) through (e) will have to be repeated till satisfactory results are obtained.

(3) Erase Head Stroke Adjustment

(a) Load an EH Stroke Check Gauge M-9042/M-9051 in the N-660ZX.
(b) Set the N-660ZX in play mode, thus check can be made on erase head stroke through the EH Stroke Indicator.
(c) Check to insure whether the erase head surface is aligned with red line on the EH Stroke Indicator. If not, adjust the erase head stroke by loosening 2 screws that assembled erase head and erase head plate.
(d) After completion of adjustment, 2 pcs. of screws shall be locked with lock tight paint.

Note:
EH Stroke Check Gauge M-9042 (DA09042A) should be used for the Models serial Nos. from A30701001 to A30702750, and EH Stroke Check Gauge M-9051 (DA-09051A) is for the Models bearing serial No. A30702751 and greater.

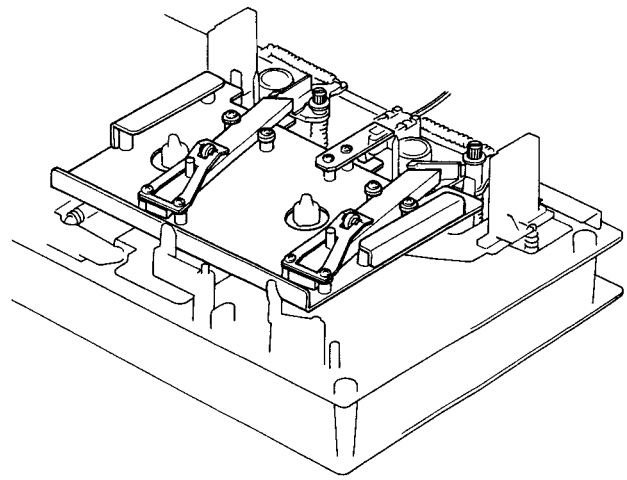


Fig. 4.9

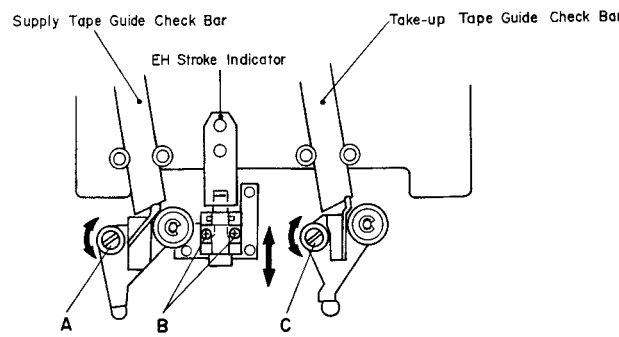


Fig. 4.10

4.6. Erase Head Height and Tilt Adjustment

Refer to Figs. 4.11 and 4.12.

(1) Remove Head Mount Base Ass'y referring to item 2.30.
(2) Load an EH Tilt Check Gauge M-9040 (DA09040A) in the N-660ZX.
(3) Set the N-660ZX in stop mode.
(4) Check to insure whether one of the 3 Beacons is illuminating. Look down the mirror as shown by an arrow mark and slowly turn the Screw "Height" counterclockwise (or clockwise) so that the two horizontal lines on the mirror will become superposed on the line (in different color) of the erase head, and check to insure whether Beacon "1" is illuminating.

(5) Turn Screw "Tilt" counterclockwise (or clockwise) to light on Beacon "2". Excessive turning will cause the Beacon "1" to light off. Adjustments of Screw "Tilt" will therefore be conducted till both of the Beacons "1" and "2" illuminate.

(6) Turn Screw "Azimuth" counterclockwise (or clockwise) to light on Beacon "3". Excessive turning will cause either Beacon "1" or "2" to light off, and therefore adjust with Screw "Azimuth" until all of the 3 Beacons "1", "2" and "3" illuminate.

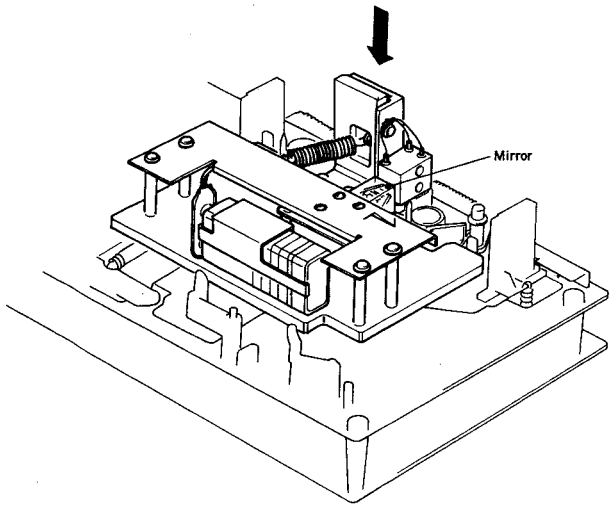


Fig. 4.11

(7) Check to insure whether the horizontal line on the mirror corresponds to that on the erase head. If not, (4) through (7) will have to be repeated till satisfactory results are obtained.

(8) After completion of adjustment, 3 pcs. of screws shall be locked with lock tight paint.

Note: Before use of this gauge, check to insure freedom from dust or dirts, or overflow in the groove of the erase head surface.

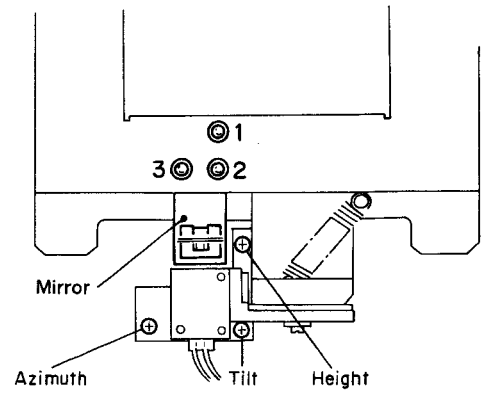


Fig. 4.12

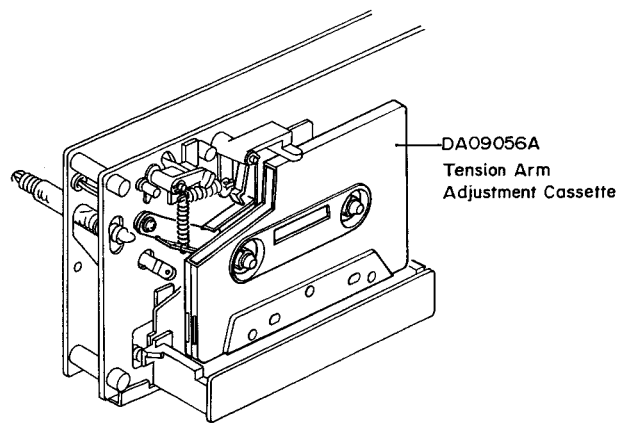


Fig. 4.13

4.7. Back Tension Adjustment

Note: This adjustment is required for the Models bearing serial Nos. A30704141 and greater.

Refer to Figs. 4.13 – 4.16.

(1) Load a Tension Arm Adjustment Cassette (DA 09056A) referring to Fig. 4.13.

(2) Set the N-660ZX in play mode.

(3) Bend the Back Tension Arm with pliers so that the gap between the Cassette Holding Spring assembled with the Head Base Ass'y and the Back Tension Arm becomes 0.5 mm as shown in Fig. 4.14. Do not bend the pointed end of the Back Tension Arm.

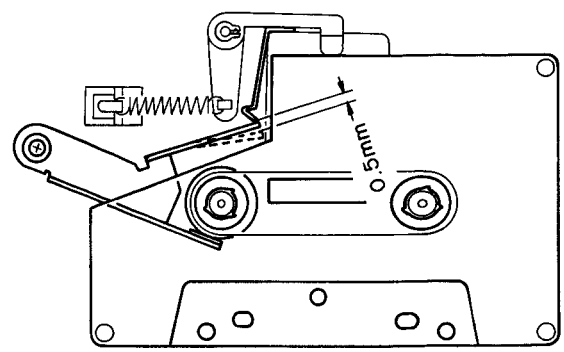


Fig. 4.14

(4) Set the N-660ZX in stop mode, and remove the Tension Arm Adjustment Cassette (DA09056A), then set the N-660ZX in cue mode.
In cue mode, check to insure that the gap is found between the Supply Reel Hub B Ass'y and the Felt of Back Tension Ass'y as shown in Fig. 4.15.
(5) Load a Back Tension Gauge (DA09055A).
(6) Set the N-660ZX in play mode and read the torque value of Back Tension Gauge.
If the value is in a range of 6 g-cm to 10 g-cm, adjustment is not necessary. If not, change the installation point of the Back Tension Spring as shown in Fig. 4. 16, and obtain the torque of 7 g-cm to 9 g-cm range.

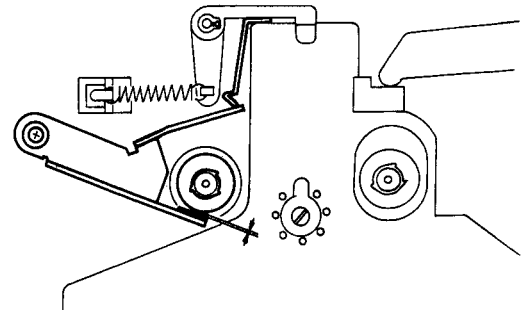


Fig. 4.15

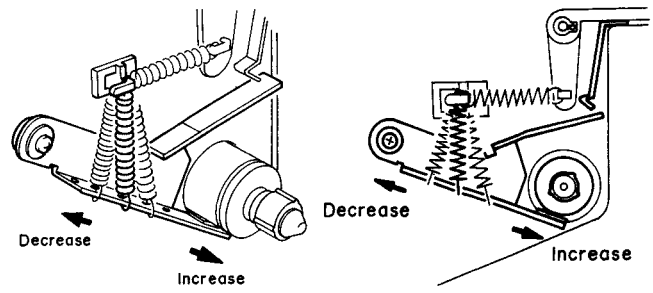


Fig. 4.16

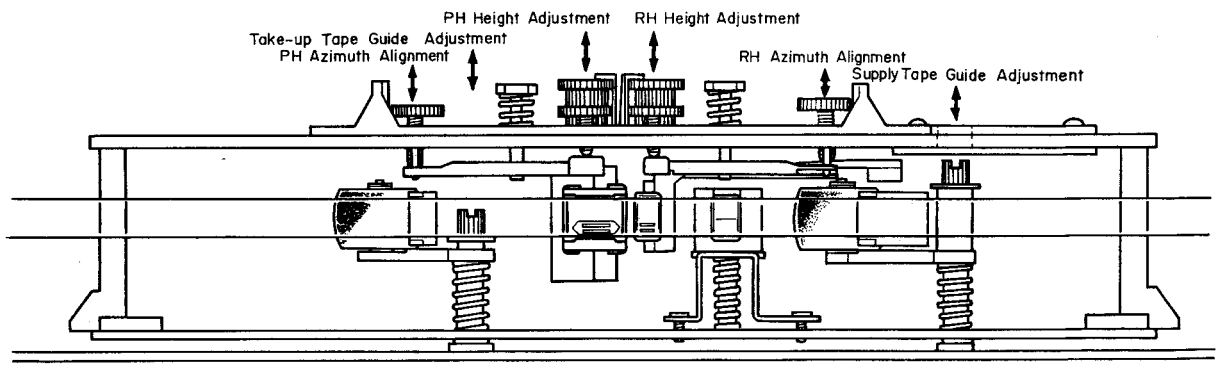


Fig. 4.17

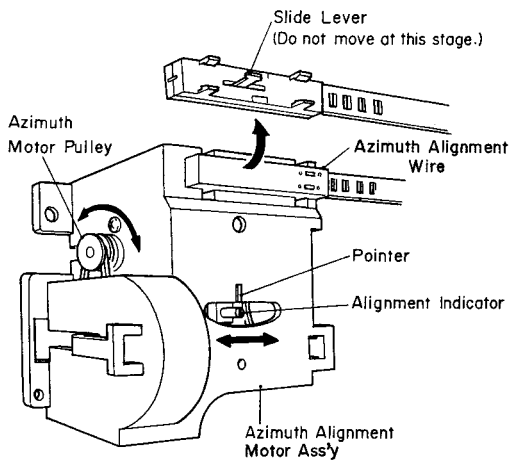


Fig. 4.18

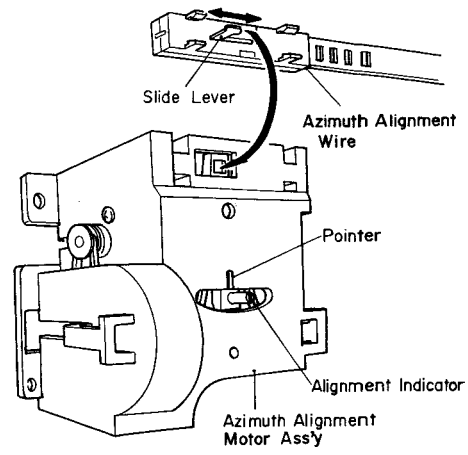


Fig. 4.19

4.8. Playback Head and Record Head Height Adjustment and Azimuth Alignment

(1) Playback Head Height Adjustment and Azimuth Alignment

Refer to Fig. 4.17.

(a) Connect a VTVM to the Output Jacks.

(b) Load a 1 kHz Track Alignment Tape (DA09007A), then set the N-660ZX in play mode.

(c) Turn the PH Height Gear until the outputs of both channels become minimum.

(d) Load a 15 kHz Azimuth Tape (DA09004A), then set the N-660ZX in play mode.

(e) Turn the PH Azimuth Alignment Screw until the outputs of both channels become maximum.

(f) Repeat above steps (b) through (e) one or two times to obtain optimum performance.

(2) Record Head Height Adjustment and Azimuth Alignment

Refer to Figs. 4.17 – 4.20.

(a) Set the N-660ZX in stop mode.
Turn the Azimuth Motor in the Azimuth Alignment Motor Ass'y by hand so that the Alignment Indicator corresponds to the pointer of the Azimuth Alignment Motor Ass'y as shown in Fig. 4.18.
Remove the Azimuth Alignment Wire by pulling out from the Azimuth Alignment Motor Ass'y. In this case, do not move the Slide Lever of the Azimuth Alignment Wire. Short both leads of capacitor C903 on the Auto Azimuth P.C.B. Ass'y with a jumper wire.

(b) Connect a VTVM to the Playback Eq. Amp. Outputs, terminals 29 (L ch) and 30 (R ch) on the Main P.C.B. Ass'y, or terminals 1 (L ch) and 2 (R ch) on the Auto Azimuth P.C.B. Ass'y.

(c) Load a Reference SX Tape (DA09025A). Set the Eq. Switch to the 70 μs position and Tape Switch to the SX position. Then set the N-660ZX in record and play mode.

(d) Set the Auto. A/Tone Switch to the Cal. position, then turn the RH Height Gear until the outputs of both channels become maximum.

(e) Feed in 15 kHz (–20 dB), then set the N-660ZX in record and play mode. Turn the RH Azimuth Alignment Screw until the outputs of both channels become maximum.

(f) Repeat above steps (d) and (e) one or two times to obtain optimum performance.

(g) After completion of the above adjustments, perform the following electrical adjustment by using the same side of the same tape as used in the above steps.
1) Set the Auto. A/Tone Switch to the Cal. position, then set the N-660ZX in record and play mode.
2) Adjust VR901 on the Auto Azimuth P.C.B. Ass'y so that the Azimuth Motor stops its rotation.

(h) Set the N-660ZX in stop mode.
Mount the Azimuth Alignment Wire on the Azimuth Alignment Motor Ass'y referring to Fig. 4.19. (Correct the position of the Slide Lever of the Azimuth Alignment Wire by sliding by hand, then insert the Slide Lever into the receptacle of the Azimuth Alignment Motor Ass'y).
Remove the shorting jumper wire from C903 on the Auto Azimuth P.C.B. Ass'y.

(i) After completion of the above adjustments, record 400 Hz tone to the same portion of both side A and side B of the tape.

(j) Immerse the recorded tape in a magnetized developing solution. In turn, check to insure that the recording head tracks across the center are separated with a distance of 0.55 to 0.75 mm (typically 0.65 mm) as illustrated in Fig. 4.20.
Note: Liquid for tape magnetized development solution
"MAGNA-SEE, SOUND CRAFT a product of CBS RECORD a division of Columbia Broadcasting System, Inc., Danbury, Conn. 06810 U.S.A., or equivalent".
After development, clean the tape otherwise pressure rollers and heads will become dirty.

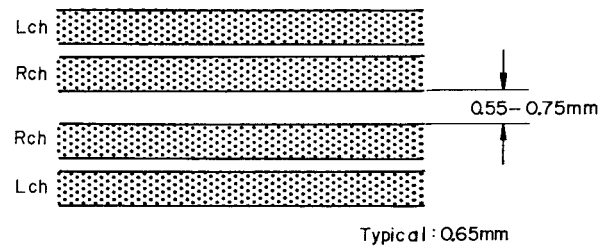


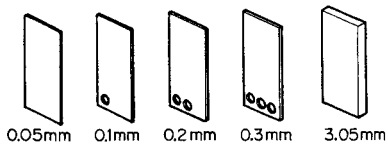
Fig. 4.20

4.9. Record Head Stroke Adjustment

Refer to Figs. 4.21 and 4.22.

Note: This adjustment will be required only to insure freedom from misalignment of the record head stroke in the record head stroke check mode.

(1) Check the accuracy of the record head stroke.
(2) Remove Head Mount Base Ass'y referring to item 2.30.
(3) Remove the record head assembly.
(4) Adjustment of Record Head Mounting Gauge M-9048 (DA09048A)
  (a) Mount the Block B onto the Mounting Gauge Plate.
  (b) Loosen the 2 screws fixing the Block A.
  (c) As shown in Fig. 4.21 hold the Gauges (3.05 mm and 0.1 mm thickness) between the Block A and Block B, fix the Block A with screws, pushing the Block A to the 2 guide pins.
(5) Remove the Block B from the Mounting Gauge Plate.
(6) As shown in Fig. 4.22, mount the R-8L record head assembly onto the Mounting Gauge Plate, then check the location of the R-8L record head surface. (If record head contacts to the Block C, loosen 2 pcs. of screws that assembled record head and R-8L record head assembly, then place the R-8L record head assembly onto the Plate.)
(7) Remove the R-8L record head assembly from the Mounting Gauge Plate.
(8) Readjustment of Record Head Mounting Gauge M-9048 (DA09048A)
  (a) Mount the Block B onto the Mounting Gauge Plate.
  (b) Loosen the 2 screws fixing the Block A.
  (c) As shown in Fig. 4.21 hold the Gauges (3.05 mm and either one of 0.05, 0.15, 0.2, 0.25, 0.3 or 0.35 mm thickness) between the Block A and Block B, fix the Block A with screw, pushing the Block A to the 2 guide pins.
(9) Remove the Block B from the Mounting Gauge Plate.
(10) Mount the R-8L record head assembly onto the Mounting Gauge Plate.
(11) As shown in the Fig. 4.22, loosen the R-8L record head with 2 pcs. of screws onto the record head plate. As the location of the Block A is secured by the item (8)-(c), push the record head to the directions A and B, then tighten 2 pcs. of screws.
(12) Check to insure freedom from gap between the Block C and record head surface, then tighten the 2 pcs. of screws on the record head plate with lock tight paint.
(13) Assemble the record head assembly to the head mount base assembly.
(14) Assemble the head mount base assembly to the mechanism assembly.
(15) Check the record head stroke.
If the above are inaccurate, items (1) through (15) will have to be repeated till satisfactory results are obtained.



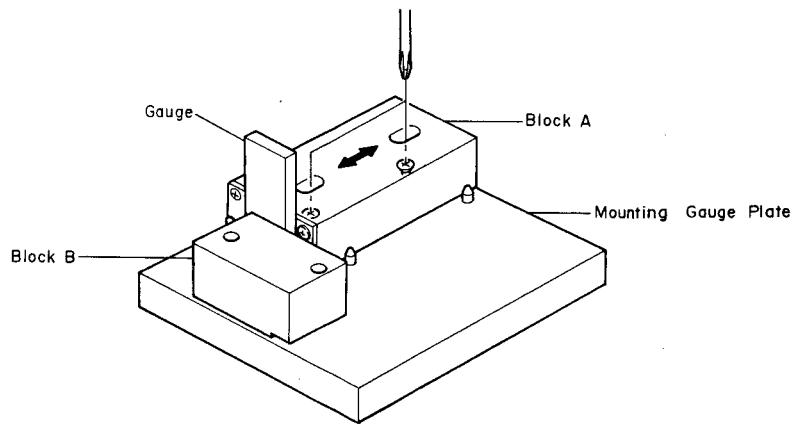


Fig. 4.21

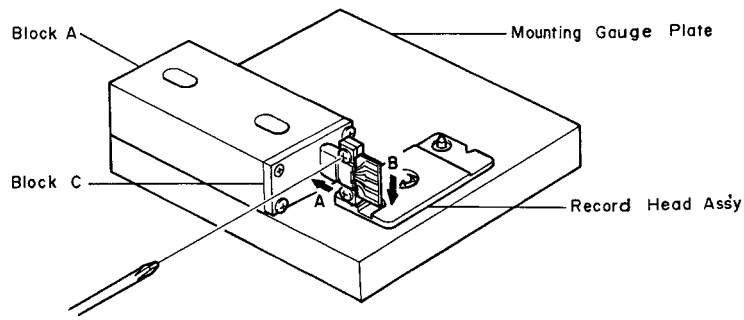


Fig. 4.22

4.10. Tape Travelling Adjustment

The adjustment shall be made with a modified version of the current type EXII C-90 as shown in Fig. 4.23 (error will be made if a current type Tape Travelling Cassette (DA09011A) should be used for this purpose).

While modifying an EXII C-90, the tape guides in the cassette housing shall be kept protected to avoid tilt. Check shall be made in the following procedures:

(1) An EXII C-90 Tape thus modified shall be loaded onto the N-660ZX.
(2) Release the back-tension (rotate the Supply Reel and feed out some length of tape) and set the N-660ZX in play mode.
(3) In this juncture, check to insure whether the tape is free from waving or slippage from the tape guide.
(4) When the modified EXII C-90 is played back, check to insure whether the tape is freedom from waving from head surface or at pressure rollers.
(5) If either of waving or slippage from the tape guide should be noted, adjustments of "4.3. Record Head and Playback Head Tilt Adjustment". "4.4. Head Base Stroke Adjustment", "4.5. Tape Guides Adjustment and Erase Head Stroke Adjustment", "4.6. Erase Head Height and Tilt Adjustment", "4.7. Back Tension Adjustment", "4.8. Playback Head and Record Head Height Adjustment and Azimuth Alignment", "4.9. Record Head Stroke Adjustment", etc. will be required.

As a case may be, the said waving or slippage may have been caused from defective Supply Pressure Roller Ass'y or Take-up Pressure Roller Ass'y without parallel contact with capstans. If such are noted, the Pressure Roller Assemblies will have to be replaced.

Further, excessively weak take-up torque or strong take-up torque may cause defective tape travelling.

The N-660ZX is intended to be an adjustment-free Model, however if the similar matters as above should be noted, please replace the Reel Hub Ass'y to obtain appropriate take-up torque.

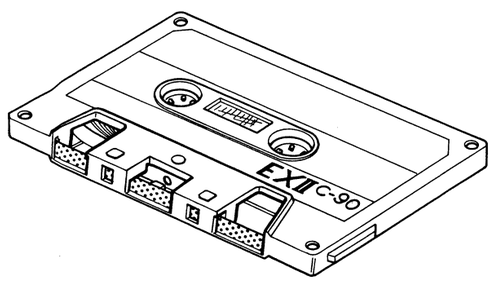


Fig. 4.23

4.11. Record Switch Linkage Adjustment

(1) Set the N-660ZX in stop mode.
(2) Loosen the screw of the Record Spring Holder, and shift the Record Spring Holder in order to remove the looseness of the Linkage Wire as shown in Fig. 4.24.1. Then tighten the screw for fixing the Record Spring Holder. (In this case, the Record Switch should be positioned at Play side. If in the Record position, it will be defective.)
(3) Set the N-660ZX in record and pause mode. Check to insure that the gap between the top of the wire and the Record Spring Holder is approx. 1 mm as shown in Fig. 4.24.2.
(Check that the Record Switch is in Record position.)
(4) Upon completion of the above adjustments, apply a quantity of lock tight paint.

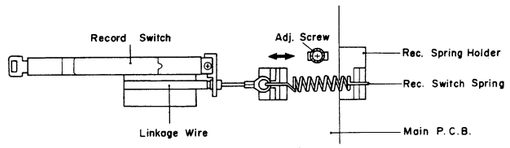


Fig. 4.24.1

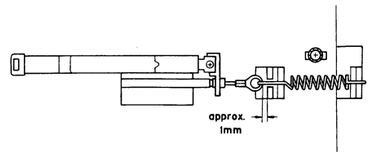


Fig. 4.24.2

4.12. Flywheel Holder Adjustment

(1) Refer to Fig. 4.25.
Tighten the Thrust Screws until the gap between the Flywheel Assemblies and Thrust Screws becomes minimized when both of the Capstan Shafts are moved backwardly and forwardly (the Thrust Springs between the Capstan Flanges and Flywheel Thrust Caps are in a flat state).
Excessive tightening of the Thrust Screws however will give damages on the Flywheel Assemblies, to which careful attention is invited.
(2) Return the Thrust Screws by 1/2 turn.
(3) Fixing the Thrust Screw with a screwdriver, lock the Lock Nut.
(4) Apply a quantity of lock tight paint to the Thrust Screws.

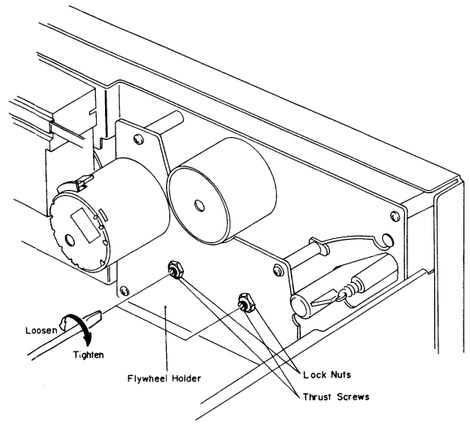


Fig. 4.25

4.13. Lubrication

N-660ZX is a lubrication-free cassette deck except when parts are replaced. Apply the following lubricant for each replaced part:

(1) LAUNA #100
Capstan Shaft
Pressure Roller Shaft
Thrust Cap
(2) FLOIL GB-TS-1
Reel Hub Shaft
Thrust portion on the Capstan Shaft
FLOIL GB-TS-1, made by Kanto Chemicals Co., Ltd., in Japan.
We suggest you use the above or equivalent type. If unavailable please contact Kanto Chemicals Co., Ltd., 1-7 Kanda Suda-cho Chiyoda-ku, Tokyo 101 Japan.
(3) Silicon Oil #3000 CST
Air Damper Piston
Note: Excessive lubrication may cause defective damper action as the 0.2ϕ hole at the end of the cylinder may be filled with oil.

5. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

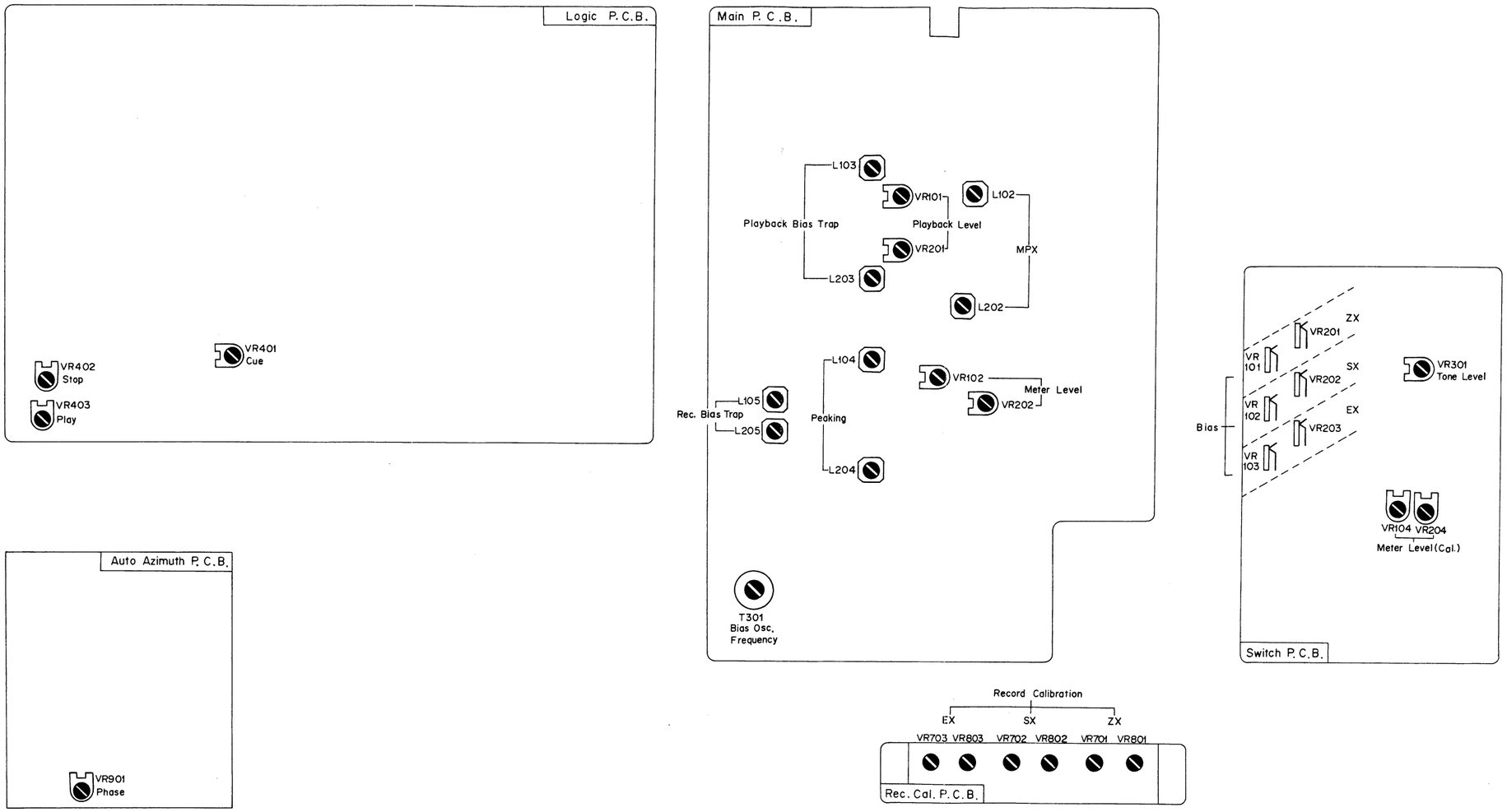


Fig. 5

6. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

6.1. Adjustment and Measurement Instructions

Note: Electrical adjustment should be performed after mechanical adjustment is completed.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Tape Speed	3 kHz Speed and Wow/Flutter Tape (DA09006A)	Frequency Counter to OUTPUT Jacks	Playback	Speed Cal. P.C.B. VR407	Adjust VR407 to obtain 3 kHz ± 0.5%.
2	Tone Calibration	Test Tone 400 Hz	VTVM to TP101 (A), TP201 (B) on the Main P.C.B.	Record, Pause Auto. A/Tone SW – CAL	Switch P.C.B. VR301	1. Set the Auto. A/Tone Switch to CAL. Turn output level control fully clockwise (maximum position). 2. Adjust VR301 to obtain 100 mV ± 0.2 dB at TP101 and TP201 on the VTVM.
3	Meter Level	400 Hz (0 dB/–10 dB/–20 dB) to INPUT Jacks	VTVM to TP101(A), TP201(B) on the Main P.C.B.	Record, Pause Auto. A/Tone SW – CAL/OFF	Main P.C.B. VR102, VR202	1. Adjust VR102 (VR202) to obtain 0 dB on the level meters at 100 mV level on the VTVM. 2. Decrease input level by 10 dB/20 dB then short or open R149 (R249) to obtain minimum deviation for –10 dB/–20 dB on the level meters. (Perform at –10 dB and –20 dB.) 3. Again increase input level so that output will become 100 mV, then re-adjust VR102 (VR202) to obtain 0 dB on the level meters.
4	MPX Filter	19 kHz ± 100 Hz to INPUT Jacks	VTVM to OUTPUT Jacks	Auto. A/Tone SW – OFF Dolby NR SW – OUT/MPX	Main P.C.B. L102, L202	1. Turn output level control fully clockwise (maximum position). 2. Adjust input level control to obtain 1 V on the VTVM. 3. Set the Dolby NR Switch to MPX position, then adjust L102 (L202) to obtain minimum reading on the VTVM (minimum reading will be less than –30 dB).
5	Playback Head Track Alignment	1 kHz Track Alignment Tape (DA09007A)	VTVM to OUTPUT Jacks	Playback Auto. A/Tone SW – OFF Eq. SW – 70 μs Dolby NR SW – OUT	Playback Head Height Adj. Screw	Adjust the Playback Head Height Adj. Screw to obtain minimum reading of both L and R channels on the VTVM. See "Playback Head Height Adjustment and Azimuth Alignment" in item 4.8.
6	Playback Head Azimuth Alignment	15 kHz Azimuth Tape (DA09004A)	VTVM to OUTPUT Jacks	Same as above	Playback Head Azimuth Alignment Screw	Adjust the Playback Head Azimuth Alignment Screw to obtain maximum reading of both L and R channels on the VTVM. See "Playback Head Height Adjustment and Azimuth Alignment" in item 4.8. Note: Repeat steps 5 and 6 one or two times to obtain optimum performance.
7	Playback level	400 Hz Level Tape (DA09005A)	VTVM to TP101, TP201 on the Main P.C.B.	Same as above	Main P.C.B. VR101, VR201	Adjust VR101 (VR201) to obtain 100 mV on the VTVM or 0 dB on the level meters.

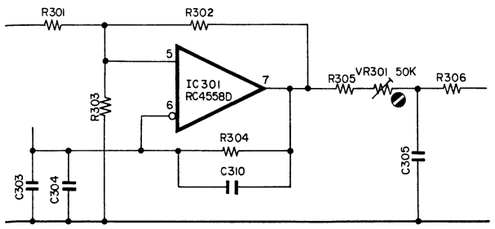


Fig. 6.1 2. Tone Calibration

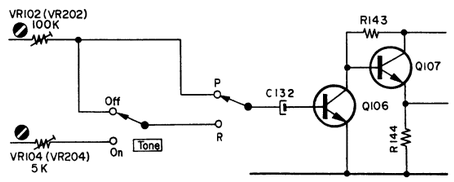


Fig. 6.2 3. Meter Level

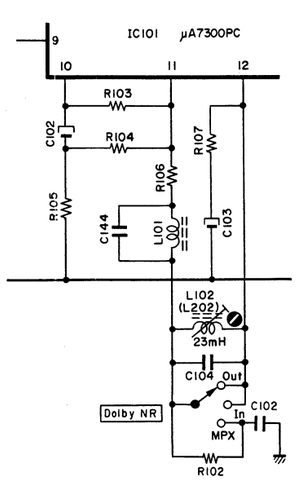


Fig. 6.3 4. MPX Filter

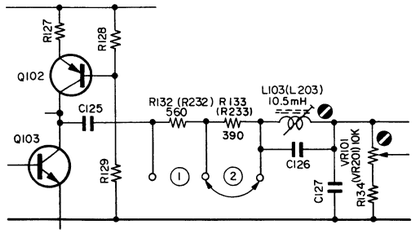


Fig. 6.4 7. Playback Level

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
8	Playback Frequency Response Adjustment	400 Hz Level Tape (DA09005A) 10 kHz PB Frequency Response Tape (DA09003A) 15 kHz PB Frequency Response Tape (DA09002A) 20 kHz PB Frequency Response Tape (DA09001A)	VTVM to OUTPUT Jacks	Playback Auto. A/Tone SW — OFF Eq. SW — 70 μs Dolby NR SW — OUT	Main P.C.B. R132, R232 R133, R233	1. Load the 400 Hz level tape and play it back. Adjust the output level control to a certain level (for example 0 dB). 2. Load the 10 kHz, 15 kHz and 20 kHz PB frequency response tapes and adjust the playback head azimuth to give maximum levels on the VTVM with each tape. Short R132 (R232) or R133 (R233) to obtain the following levels against 400 Hz level tape. Refer to Fig. 6.5. 10 kHz: −20 dB −1 dB to +2 dB 15 kHz: −20 dB −1 dB to +3 dB 20 kHz: −20 dB −1 dB to +4 dB 3. Conduct step 6 "Playback Head Azimuth Alignment". 4. If above is not sufficient, refer to "Playback Frequency Response Adjustment" in item 6.2.
9	Bias Oscillation Frequency and Erase Current	Connect an additional 0.1 Ω resistor in series to the Erase Head	VTVM and Frequency Counter across the additional 0.1 Ω resistor	Record, Pause Tape SW — ZX Eq. SW — 70 μs Dolby NR SW — OUT	Main P.C.B. T301 R304, R305	1. Adjust T301 to obtain 105 kHz on the frequency counter. 2. Check the erase current by the VTVM. Erase current will be in a range of 310 mA to 400 mA (typically approx. 350 mA). If erase current is not sufficient, increase it by shorting R304 or R305. 3. After completion of the erase current adjustment, recheck the bias oscillation frequency.
10	Record Amplifier Equalizer	23 kHz (−20 dB) to INPUT Jacks	VTVM to CN2-1, CN2-3 on the Main P.C.B.	Record, Pause Auto. A/Tone SW — OFF Tape SW — ZX Eq. SW — 70 μs Dolby NR SW — OUT	Main P.C.B. L104, L204	1. Remove the bias-cut-jumper from the dip side of the Main P.C.B. 2. Adjust L104 (L204) to obtain peak reading at 23 kHz on the VTVM. 3. Re-solder the bias-cut-jumper.
11	Bias Trap (Record Amp.)	Remove input signals	Same as above	Same as above	Main P.C.B. L105, L205	Adjust L105 (L205) to obtain maximum reading on the VTVM.
12	Bias Trap (Playback Amp.)	Remove input signals	VTVM to Playback Eq. Amp. Output; Terminals 29, 30 on the Main P.C.B. or Terminals 1, 2 on the Auto Azimuth P.C.B.	Same as above	Main P.C.B. L103, L203	Adjust L103 (L203) to obtain minimum reading on the VTVM.

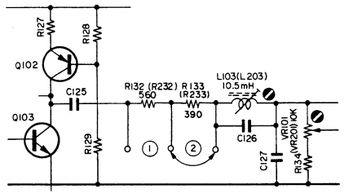


Fig. 6.5 8. Playback Frequency Response
12. Bias Trap (Playback Amp.)

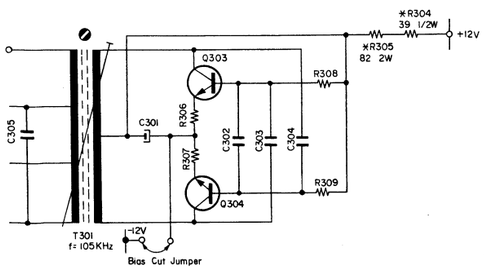


Fig. 6.6 9. Bias Oscillation Frequency and Erase Current

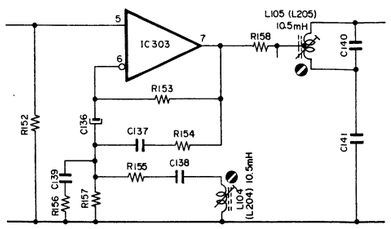


Fig. 6.7 10. Record Amp. Equalizer
11. Bias Trap (Record Amp.)

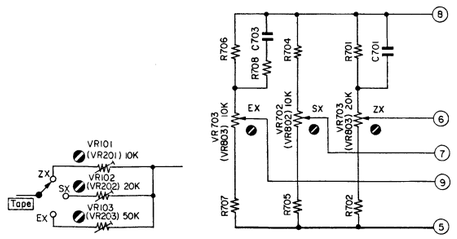


Fig. 6.8 13. Record Head Height and Azimuth

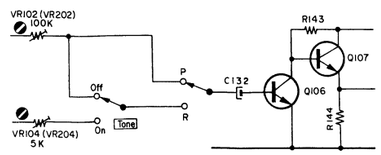


Fig. 6.9 13. Record Head Height and Azimuth

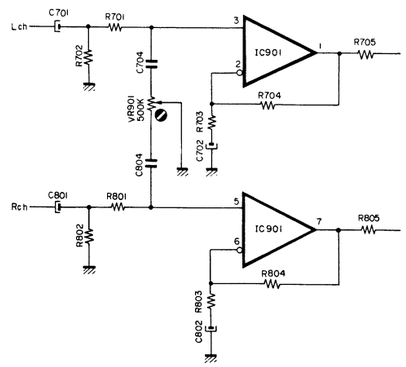


Fig. 6.10 13. Record Head Height and Azimuth

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
13	Record Head Height Adjustment and Azimuth Alignment	400 Hz (0 dB) and 15 kHz (–20 dB) to INPUT Jacks	VTVM to Playback Eq. Amp. Output; Terminal 29, 30 on the Main P.C.B. or Terminal 1, 2 on the Auto Azimuth P.C.B.	Record, Playback Auto. A/Tone SW – OFF/CAL Tape SW – SX Eq. SW – 70 μs Dolby NR SW – OUT	Head Height: Record Head Height Adj. Screw Azimuth Alignment: Record Head Azimuth Alignment Screws Rec. Cal. P.C.B. (Level) VR702, VR802 Switch P.C.B. VR102, VR202 VR104, VR204 Auto Azimuth P.C.B. VR901	1. In stop mode, turn the Azimuth Motor by hand so that the Alignment Indicator corresponds to the pointer of the Azimuth Alignment Motor Ass'y as shown in Fig. 4.18. Remove the Azimuth Alignment Wire by pulling out from the Azimuth Alignment Motor Ass'y. (In this case, do not move the Slide Lever of the Azimuth Alignment Wire.) Short both leads of capacitor C903 on the Auto Azimuth P.C.B. Ass'y with a jumper wire. 2. Record Head Height Adjustment: a. Set the Auto. A/Tone Switch to OFF. b. Feed in 400 Hz, then adjust input level controls to obtain 0 dB on the level meters. c. Record signals on the reference SX tape (DA09025A), then play it back. d. Adjust the Record Head Height Adj. Screw to obtain maximum readings of both channels on the VTVM. 3. Record Head Azimuth Alignment: a. Set the Auto. A/Tone Switch to OFF. b. Feed in 400 Hz, then adjust input level controls to obtain 0 dB on the level meters. c. Record signals on the reference SX tape (DA09025A), then play it back. d. Adjust Record Cal. VR702 (VR802) to the center position. e. Adjust Bias VR102 (VR202) to obtain maximum reading on the VTVM. f. Adjust Record Cal. VR702 (VR802) to obtain the same reading as the source monitor level on the level meter. g. Decrease the Generator output level by 20 dB, then feed in 15 kHz (–20 dB). h. Record signals on the reference SX tape (DA09025A), then play it back. i. Adjust the Record Head Azimuth Alignment Screw to obtain maximum readings of both channels on the VTVM. j. Adjust finely VR102 (VR202) to obtain the same reading as the source monitor level on the VTVM. k. Repeat above substeps 2 and 3 one or two times to obtain optimum performance. l. Set the Auto. A/Tone Switch to CAL. m. Record signals on the reference SX tape (DA09025A), then play it back. n. Adjust VR901 so that the Azimuth Motor stops its rotation. o. Adjust VR104 (VR204) so that the level meter indicates 0 dB for both channels. (Note that this adjustment is required only when the Auto. A/Tone Switch is turned to the CAL position.) 4. After completion of above steps, mount the Azimuth Alignment Wire on the Azimuth Alignment Motor Ass'y. Remove the shorting jumper wire from C903 on the Auto Azimuth P.C.B. Ass'y. 5. Check the Auto Azimuth Alignment function as follows: a. Set the Auto. A/Tone Switch to OFF. b. Load a reference tape, then depress the Record Button and Play Button simultaneously to start recording. c. Change the Auto. A/Tone Switch to the CAL position and check to insure that the play lamp will keep flashing. d. After the flashing is completed, check to insure that the playback level is indicated on the level meter for both channels. e. Set the Auto. A/Tone Switch to OFF, then feed in 15 kHz (–20 dB). f. Record signals on the reference SX tape (DA09025A), then play it back. g. Check to insure that the playback level is the same as the source monitor level for both channels. h. If above is insured, the Auto Azimuth Alignment function is accurate.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
14	Record Level Calibration and Recording Bias Current Adjustment	Test Tone 400 Hz or 400 Hz and 15 kHz (–20 dB) to INPUT Jacks	VTVM and Distortion Meter to OUTPUT Jacks	Record, Playback Auto. A/Tone SW – CAL/OFF Tape SW – EX/SX/ZX Eq. SW – 120 μs (EX) 70 μs (SX/ZX) Dolby NR SW – OUT	Rec. Cal. P.C.B. (Level) ZX: VR701, VR801 SX: VR702, VR802 EX: VR703, VR803 Switch P.C.B. (Bias) ZX: VR101, VR201 SX: VR102, VR202 EX: VR103, VR203	For each tape to be used, perform the Auto Azimuth Alignment operation by depressing Record and Play Buttons simultaneously after setting the Auto. A/Tone Switch to CAL. To minimize the influence of interference between each volume, adjustment should be made in the order of ZX, SX and EX. 1. Set the Auto. A/Tone Switch to CAL. 2. Record signals on the reference ZX tape (DA09037A), SX tape (DA09025A), or EXII tape (DA09021A), then play it back. 3. Adjust Record Cal. VR701 (VR801) (for ZX), VR702 (VR802) (for SX), or VR703 (VR803) (for EXII) to the center position. 4. Adjust Bias VR101 (VR201) (for ZX), VR102 (VR202) (for SX), or VR103 (VR203) (for EXII) to obtain maximum reading on the VTVM. 5. Set the Auto. A/Tone Switch to OFF, then feed in 15 kHz (–20 dB). 6. Adjust finely VR101 (VR201) (for ZX), VR102 (VR202) (for SX), or VR103 (VR203) (for EXII) to obtain the same reading as the source monitor level on the VTVM. 7. Set the Auto. A/Tone Switch to CAL. 8. Adjust Record Cal. VR701 (VR801) (for ZX), or VR702 (VR802) (for SX), or VR703 (VR803) (for EXII) to obtain 0 dB on the level meter. 9. Repeat 5 through 8 as above two or three times to obtain optimum performance. 10. Check whether the total harmonic distortion (T.H.D.) is less than 0.8% (for ZX), or 1.0% (for SX and EXII). Note: Typical bias current ZX: approx. 4.6 mA SX: approx. 2.5 mA EXII: approx. 1.6 mA
15	Overall Frequency Response	400 Hz (0 dB) and 20 Hz to 22 kHz/20 kHz (–20 dB) to INPUT Jacks	VTVM and Distortion Meter to OUTPUT Jacks	Record, Playback Auto. A/Tone SW – OFF Tape SW – EX/SX/ZX Eq. SW – 120 μs (EX) 70 μs (SX/ZX) Dolby NR SW – OUT	Main P.C.B. L104, L204	For each tape to be used, perform the Auto Azimuth Alignment operation by depressing Record and Play Buttons simultaneously after setting the Auto. A/Tone Switch to CAL. 1. Feed in 400 Hz (0 dB) and adjust input level controls to obtain 0 dB on the level meters. 2. Switch the Generator output level to –20 dB, then record and play it back. 3. Feed in 20 Hz to 22 kHz (–20 dB) (for ZX), or 20 Hz to 20 kHz (–20 dB) (for SX and EXII), and check to insure if the output levels are within –20 dB ± 3 dB. 4. If above is not sufficient, adjust L104 (L204) to obtain approx. –20 dB on the VTVM. 5. Conduct step 14 "Record Level Calibration and Recording Bias Current Adjustment". 6. If above is not sufficient, precise re-adjustment of step 8 "Playback Frequency Response", replacement of Playback Head or Record Head, or check on item 4.10 "Tape Travelling Adjustment" will be required.
16	Crosstalk	1 kHz to INPUT Jacks	1 kHz Band Pass Filter and VTVM to OUTPUT Jacks	Record and Playback Auto. A/Tone SW – OFF Tape SW – ZX Eq. SW – 70 μs Dolby NR SW – OUT		1. Erase the tape with bulk eraser. 2. Adjust input level controls to obtain 0 dB on the level meters, and record the signals on the reference tape. 3. Turn the cassette tape the other way round and play it back. 4. Measure the difference between 2 and 3.
17	Channel Separation	1 kHz to INPUT Jacks	Same as above	Same as above		1. Erase the tape with bulk eraser. 2. Adjust Lch (Rch) input level control to obtain 0 dB on the level meters, and close Rch (Lch) input level control. 3. Record and play it back, then measure the Rch (Lch) level.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
18	Erasure	1 kHz to INPUT Jacks	1 kHz Band Pass Filter and VTVM to OUTPUT Jacks	Record and Playback Auto. A/Tone SW – OFF Tape SW – ZX Eq. SW – 70μs Dolby NR SW – OUT		1. Erase the tape with bulk eraser. 2. Adjust input level controls to obtain 0 dB on the level meters, and record the signals on the reference tape. 3. Rewind the tape then close input level controls. 4. Record and play it back, then measure the difference between 2 and 3.
19	Signal to Noise Ratio	400 Hz to INPUT Jacks	VTVM and Distortion Meter to OUTPUT Jacks	Record and Playback Monitor SW – Tape Auto. A/Tone SW – OFF Tape SW – ZX Eq. SW – 70 μs Dolby NR SW – MPX		1. Feed in 400 Hz and record, and play it back. 2. Adjust the input level controls to obtain 3% total harmonic distortion in playback mode. 3. Close the input level controls then record. 4. After rewound, play back and check the output level difference between 2 and 3. Note: The filter of IHF-A curve shall be used in the measurements.
20	Total Harmonic Distortion	400 Hz to INPUT Jacks	Distortion Meter to OUTPUT Jacks	Record and Playback Auto. A/Tone SW – OFF Tape SW – EX/SX/ZX Eq. SW – 120 μs (EX) 70 μs (SX/ZX) Dolby NR SW – OUT		1. Adjust input level controls to obtain 0 dB on the level meters. 2. Record and play it back. 3. Read the distortion meter and check to insure that the distortion is less than 0.8% for ZX tape and 1.0% for SX and EXII tapes.
21	Wow/Flutter	3 kHz Speed and Wow/Flutter Tape (DA09006A)	Wow/Flutter Meter to OUTPUT Jacks	Playback Monitor SW – Tape Auto. A/Tone SW – OFF Eq. SW - 70 μs Dolby NR SW – OUT		Play back and read the wow/flutter meter.

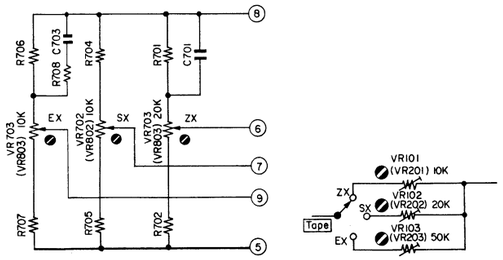


Fig. 6.11 14. Recording Level and Bias Current

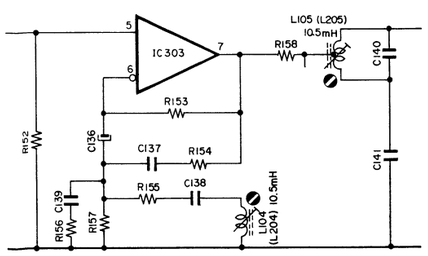


Fig. 6.12 15. Overall Frequency Response

6.2. Frequency Response Adjustment

(1) Playback Frequency Response Adjustment

Refer to Figs. 6.13 and 6.14.

(a) Level Adjustment (for middle frequency response)

This adjustment will be required when playback level is not sufficient at 10 kHz PB Frequency Response Tape (refer to step 8 in "6.1. Adjustment and Measurement Instructions.").

Playback equalization level can be varied by the modification of R130 (R230) and R131 (R231).

Following are the details for level modification:

Approx. +1 dB	R131	(R231):	3.0K
	R130	(R230):	4.3K
0 dB	R131	(R231):	3.3K
	R130	(R230):	4.7K
Approx. -1 dB	R131	(R231):	3.6K
	R130	(R230):	5.1K

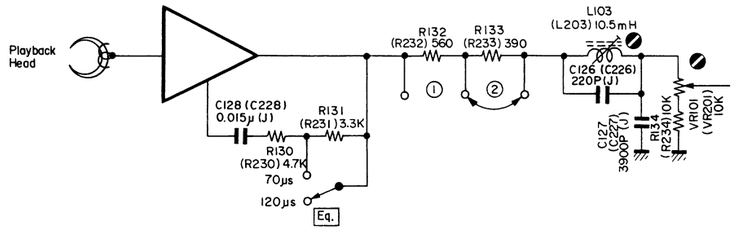


Fig. 6.14 Playback Eq. Amp.

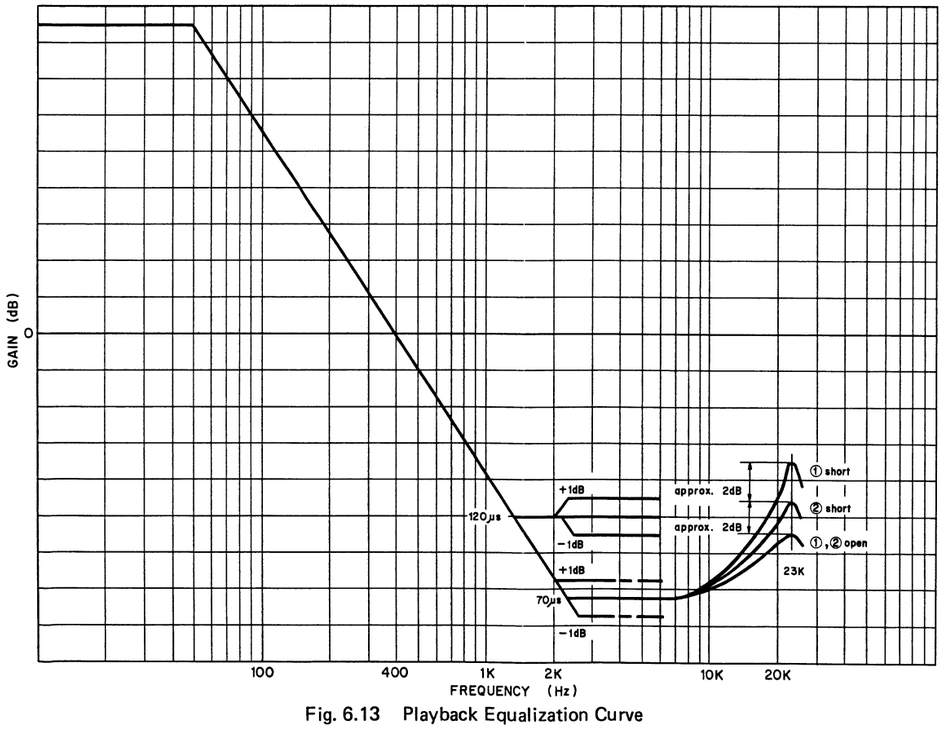


Fig. 6.13 Playback Equalization Curve

(b) Peaking Adjustment (for high frequency response)

This adjustment will be required when playback level is not sufficient at 20 kHz PB Frequency Response Tape (refer to step 8 in "6.1. Adjustment and Measurement Instructions").

Peaking portion compensates the gap loss of the playback head.

Peaking level is varied by the short circuit of R132 (R232) or R133 (R233) as illustrated in the figure.

(2) Record Current Frequency Response Adjustment

Record eq. peaking is adjusted for compensating the overall frequency response when playback frequency response is completed.

Normally however peaking frequency is pre-adjusted to approx. 23 kHz in record mode. See Fig. 6.15.

(a) For ZX Tape

1) Feed in 400 Hz (0 dB), then record and play it back.
   Adjust bias current by VR101 (VR201) on the Switch P.C.B. to obtain a 0.8% distortion.
2) Feed in 10 kHz and 400 Hz (−20 dB), then record and play it back.
   Check the difference of the levels between 10 kHz and 400 Hz, and mount an additional capacitor in parallel with the C118 (C218) on the Main P.C.B. from the dip side of the printed circuit board depending upon the difference of the levels against 400 Hz. See Fig. 6.16.

	Add	Total
0 dB	0	680 pF
-1 dB	330 pF	1010 pF
-2 dB	680 pF	1360 pF

3) Feed in 22 kHz (−20 dB), then record and play it back.
   Adjust record peaking coil L104 (L204) to obtain flat overall frequency response.

(b) For SX Tape

1) Feed in 15 kHz and 400 Hz (−20 dB), then record and play it back.
   Adjust bias current by VR102 (VR202) on the Switch P.C.B. to obtain flat overall frequency response.
2) Feed in 20 kHz and 400 Hz (−20 dB), then record and play it back.
   And check to insure that the overall frequency response is flat.

(c) For EX Tape

1) Feed in 15 kHz and 400 Hz (−20 dB), then record and play it back.
   Adjust bias current by VR103 (VR203) on the Switch P.C.B. to obtain flat overall frequency response.
2) Feed in 20 kHz and 400 Hz (−20 dB), then record and play it back.
   And check to insure that the overall frequency response is flat.

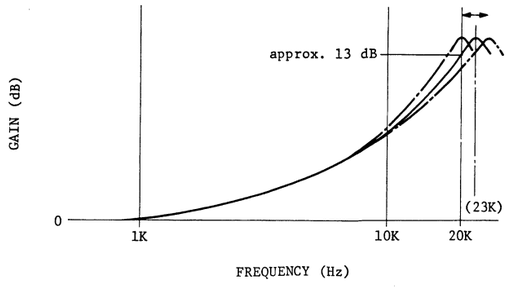


Fig. 6.15 Record Peaking Curve

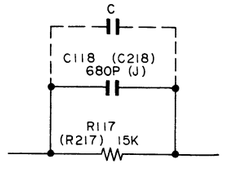


Fig. 6.16

6.3. Dolby NR Circuit Check

Dolby NR circuit incorporates a Dolby B-Type NR IC (μA7300PC) which has no adjustment point.
Perform the checks and make sure that the IC operates accurately i.e., frequency response through IC is accurate.

Signal Source: 5 kHz to INPUT Jacks
Output Connection: VTVM to the output side of C117 (C217) on the Main P.C.B.
Mode: Record, Pause
MPX SW – IN

(1) Remove the Bias-cut Jumper from the dip side of the Main P.C.B.
(2) Connect a VTVM to TP101 (TP201) on the Main P.C.B.
Feed in 5 kHz and adjust the input level so that the VTVM may read 100 mV (0 dB) at each test point. Pointer on the meter will indicate 0 dB.
(3) Remove the VTVM from TP101 (TP201) and reconnect it to the output side of C117 (C217). Check to insure that the VTVM indicates approx. 560 mV.
(4) Decrease the input level (0 dB) by 20 dB or 30 dB. Check to insure that the level at output side of C117 (C217) corresponds to the following with the Dolby NR Switch IN and OUT.
(5) After completion of the adjustment, reconnect the Bias-cut Jumper.

Input Level	Capacitor Output Level		
(f=5 kHz)	Dolby NR OUT	Dolby NR IN	Difference between IN and OUT
−20 dB	−20 dB	−16.8 dB ± 1.5 dB	3.2 dB ± 1.5 dB
−30 dB	−30 dB	−21.8 dB ± 1.5 dB	8.2 dB ± 1.5 dB

7. MOUNTING DIAGRAMS

Note: Mounting diagram shows a dip side view of the printed circuit board.

7.1. Control Switch P.C.B. Ass'y

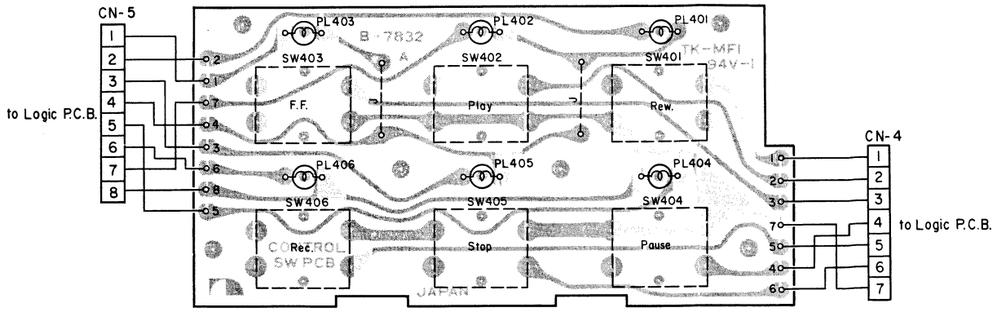


Fig. 7.1

7.2. Lamp P.C.B. B Ass'y

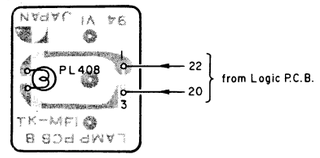


Fig. 7.2

7.3. Lamp P.C.B. C Ass'y

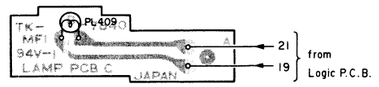


Fig. 7.3

7.4. RAMM P.C.B. Ass'y

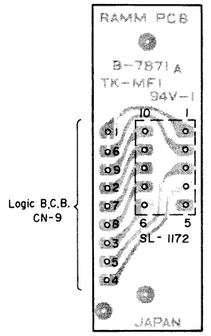


Fig. 7.4

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04071A	**Control Switch P.C.B. Ass'y**		**BA04209A**	**RAMM P.C.B. Ass'y**
	0B07832A	Control Switch P.C.B.		0B07871A	RAMM P.C.B.
SW401-406	0B07219A	Semi-switch	CN9	0B08712A	9P-H Connector Ass'y
PL401-406	0B08552A	Lamp 12V 25mA		0B06246A	Segment LED (1 pce.)
CN4	0B08631B	7P-H Connector A Ass'y			
CN5	0B08630B	8P-H Connector A Ass'y			
	BA04062A	**Lamp P.C.B. B Ass'y**			
	0B07838A	Lamp P.C.B. B			
PL408	0B08586A	Lamp 12V 60mA			
	BA04063A	**Lamp P.C.B. C Ass'y**			
	0B07840A	Lamp P.C.B. C			
PL409	0B08586A	Lamp 12V 60mA			

Schematic Ref. No.	Part No.	Description
	BA04202A	**Fuse P.C.B. Ass'y (U.S.A. & Canada)**
	0B07842A	Fuse P.C.B.
F1	0B08374A	Fuse 1A 250V
M2	0B08342A	Spark Killer
	0M04075A	Fuse Caution A112 (1 pce.)
	0M03782A	Fuse Label 1A (1 pce.)
	0J03834B	Fuse P.C.B. Holder (1 pce.)
	0E00606A	Screw M3x6 Philips Pan Head (3A) (2 pcs.)
	0E00752A	Eyelet (6 pcs.)
	BA04203A	**Fuse P.C.B. Ass'y (Japan)**
	0B07842A	Fuse P.C.B.
F1	0B08686A	Fuse 1A 250V
M2	0B08363A	Spark Killer
	0M03782A	Fuse Label 1A (1 pce.)
	0J03834B	Fuse P.C.B. Holder (1 pce.)
	0E00606A	Screw M3x6 Philips Pan Head (3A) (2 pcs.)
	0E00752A	Eyelet (6 pcs.)
	BA04206A	**Fuse P.C.B. Ass'y (Others)**
	0B07842A	Fuse P.C.B.
F1	0B08263A	Fuse T 315mA 250V
F4,5	0B08161A	Fuse T 630mA 250V
M2	0B08240A	Spark Killer
	0B08349A	Fuse Clip (4 pcs.)
	0M04073A	Fuse Label 315mA (1 pce.)
	0M04072A	Fuse Label 630mAx2 (1 pce.)
	0J03834B	Fuse P.C.B. Holder (1 pce.)
	0E00606A	Screw M3x6 Philips Pan Head (3A) (2 pcs.)
	0E00752A	Eyelet (6 pcs.)
	BA04205A	**Fuse P.C.B. Ass'y (UK & Australia)**
	0B07842A	Fuse P.C.B.
F1	0B08665A	Fuse T 160mA 250V
F4,5	0B08161U	Fuse T 630mA 250V
M2	0B08240A	Spark Killer
	0B08349A	Fuse Clip (6 pcs.)
	0M04066A	Fuse Label 160mA (1 pce.)
	0M04072A	Fuse Label 630mAx2 (1 pce.)
	0J03834B	Fuse P.C.B. Holder (1 pce.)
	0E00606A	Screw M3x6 Philips Pan Head (3A) (2 pcs.)
	0E00752A	Eyelet (6 pcs.)
	BA04204A	**Fuse P.C.B. Ass'y (220V Class 2)**
	0B07842A	Fuse P.C.B.
F1	0B08665A	Fuse T160mA 250V
F4,5	0B08161U	Fuse T630mA 250V
M2,3	0B08445A	Spark Killer
	0B08349A	Fuse Clip (6 pcs.)
	0M04066A	Fuse Label 160mA (1 pce.)
	0M04072A	Fuse Label 630mA x 2 (1 pce.)
	0J03834B	Fuse P.C.B. Holder (1 pce.)
	0E00606A	Screw M3x6 Philips Pan Head (3A) (2 pcs.)
	0E00752A	Eyelet (6 pcs.)

7.5. Fuse P.C.B. Ass'y

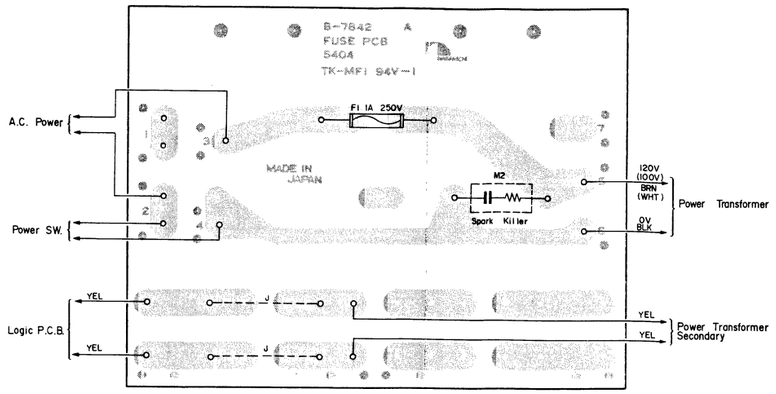


Fig. 7.5.1 U.S.A., Canada and Japan

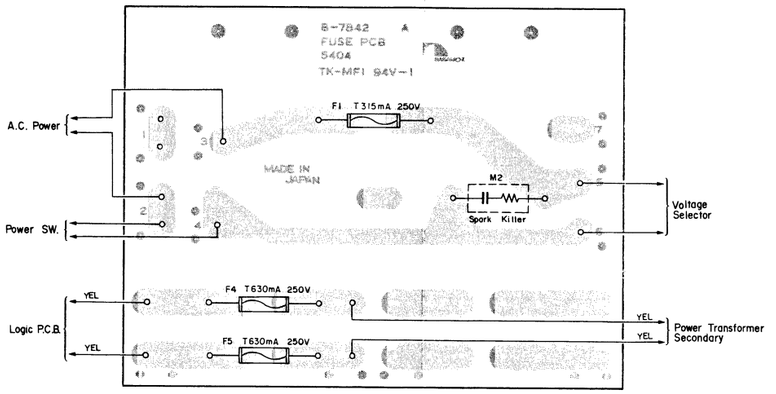


Fig. 7.5.2 Others

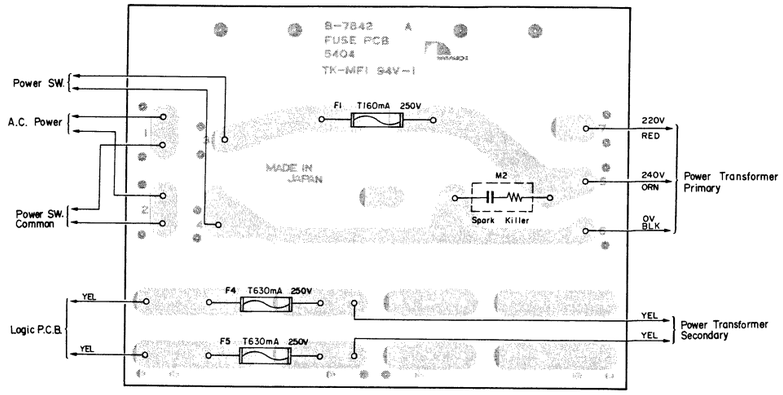


Fig. 7.5.3 UK and Australia

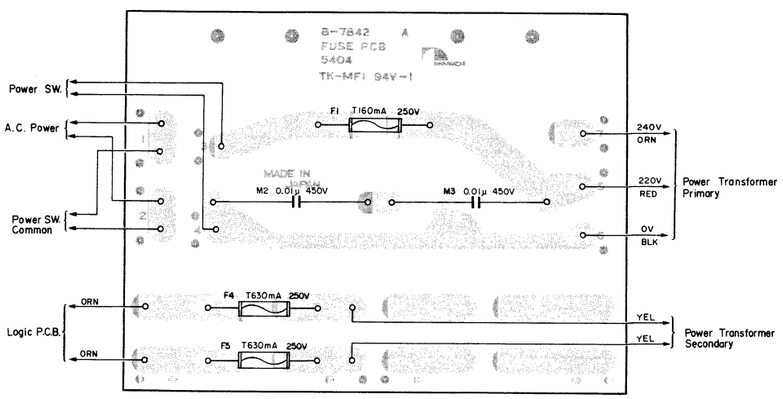


Fig. 7.5.4 220 V Class 2

Schematic Ref. No.	Part No.	Description		Schematic Ref. No.	Part No.	Description	
	BA04207A	**Auto Azimuth P.C.B. Ass'y**			**BA04176A**	**Pin Jack P.C.B. Ass'y**	
	0B07872A	Auto Azimuth P.C.B.			0B07835A	Pin Jack P.C.B.	
IC901,905	0B06124B	IC	μPC4558C	FC5	0B05238A	5P Flat Cable	50mm
IC902	0B06216A	IC	RC4556D		0B08709A	Jack Unit	(1 pce.)
IC903	0B06213A	IC	TC4013BP		0E00037A	Earth Lug B-5	(1 pce.)
IC904	0B06244A	IC	TC4073BP				
Q901,902	0B01872A	Transistor	2SC945 (L)		**BA04070A**	**Auto Shut-off P.C.B. Ass'y**	
905,906							
907,909					0B07839A	Auto Shut-off P.C.B.	
910				Q449	0B01872A	Transistor	2SC945 (L)
Q903	0B06066A	Transistor	2SD471	Q450	0B06228A	Photo Transistor	PH104
Q904	0B06069A	Transistor	2SB564	D470	0B06181A	Silicon Diode	1SS53
Q908	0B06013A	Transistor	2SA733	R603	0B05671A	Carbon Resistor	2.2M ERD-25T J
D701,702	0B06181A	Silicon Diode	1SS53	R604	0B05615A	Carbon Resistor	22K ERD-25T J
801,802			(10 pcs.)	R605	0B09215A	Fail Safe Type Resistor	100 RDF-25S J
901-905				R606	0B01888A	Carbon Resistor	10K ERD-25T J
909				C453	0B01405A	Electrolytic Capacitor	1μ 50V
VR901	0B09107A	Semi-fixed Volume	500K	PL407	0B08552A	Lamp	12V 25mA
R701,801	0B05625A	Carbon Resistor	220K ERD-25T J				
917,919							
R702,802	0B01889A	Carbon Resistor	100K ERD-25T J				
929,930							
R703,803	0B05576A	Carbon Resistor	470 ERD-25T J				
R704,804	0B05627A	Carbon Resistor	330K ERD-25T J				
904,927							
R705,706	0B05509A	Carbon Resistor	33K ERD-25T J				
805,806							
905,906							
907,909							
910,925							
R707,807	0B05671A	Carbon Resistor	2.2M ERD-25T J				
920,923							
928							
R901,902	0B05776A	Carbon Resistor	1M ERD-25T J				
903,918							
R908	0B01681A	Carbon Resistor	3.3K ERD-25T J				
R911,912	0B01887A	Carbon Resistor	5.6K ERD-25T J				
R913,922	0B01888A	Carbon Resistor	10K ERD-25T J				
R914,916	0B05615A	Carbon Resistor	22K ERD-25T J				
924,931							
R915	0B09380A	Carbon Resistor	1.5M ERD-25T J				
R921	0B05692A	Carbon Resistor	68K ERD-25T J				
R926	0B01682A	Carbon Resistor	6.8K ERD-25T J				
R932	0B05626A	Carbon Resistor	150K ERD-25T J				
R933	0B05641A	Carbon Resistor	47K ERD-25T J				
C701,801	0B01405A	Electrolytic Capacitor	1μ 50V				
901,902							
C702,802	0B01412A	Electrolytic Capacitor	10μ 16V				
C704,804	0B01802A	Mylar Capacitor	2200P 50V J				
C705,805	0B01676A	Mylar Capacitor	0.056μ 50V				
C903	0B09372A	Electrolytic Capacitor	2.2μ 25V				
C904	0B05772A	Tantalum Capacitor	0.22μ 35V				
CN10	0B08656A	2P-T Post					

7.6. Auto Azimuth P.C.B. Ass'y

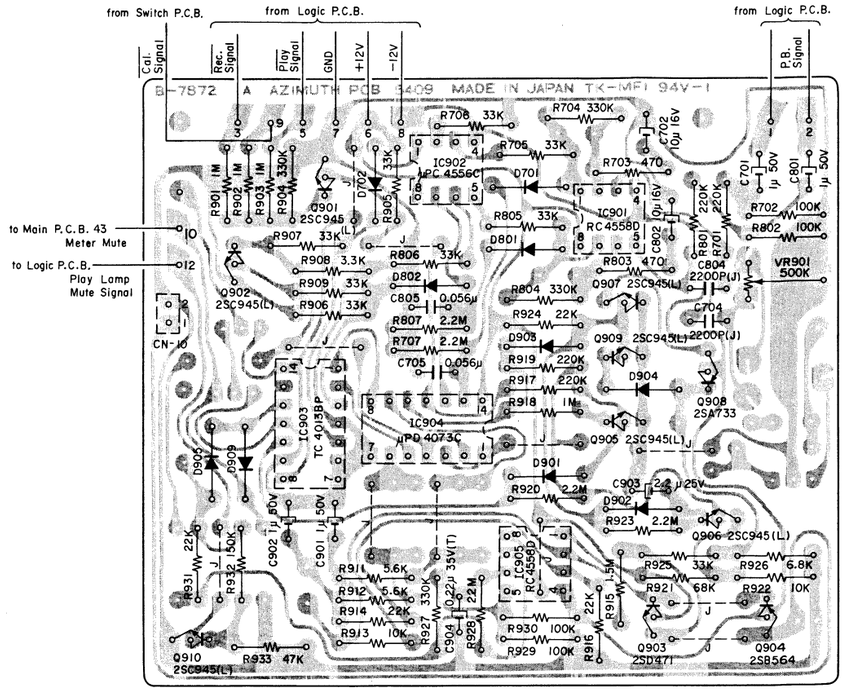


Fig. 7.6 Note: Diode is 1SS53 unless otherwise specified.

7.7. Pin Jack P.C.B. Ass'y

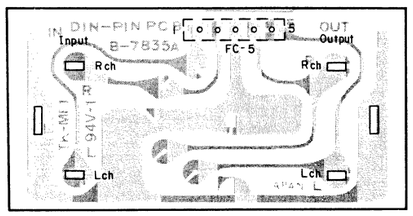


Fig. 7.7

7.8. Auto Shut-off P.C.B. Ass'y

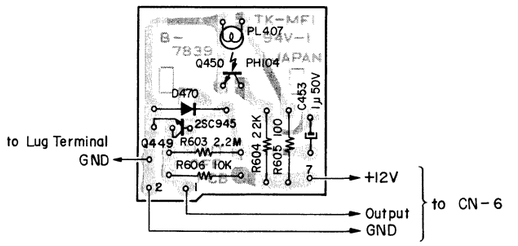


Fig. 7.8
Note: Diode is 1SS53 unless otherwise specified.

7.9. Switch P.C.B. Ass'y

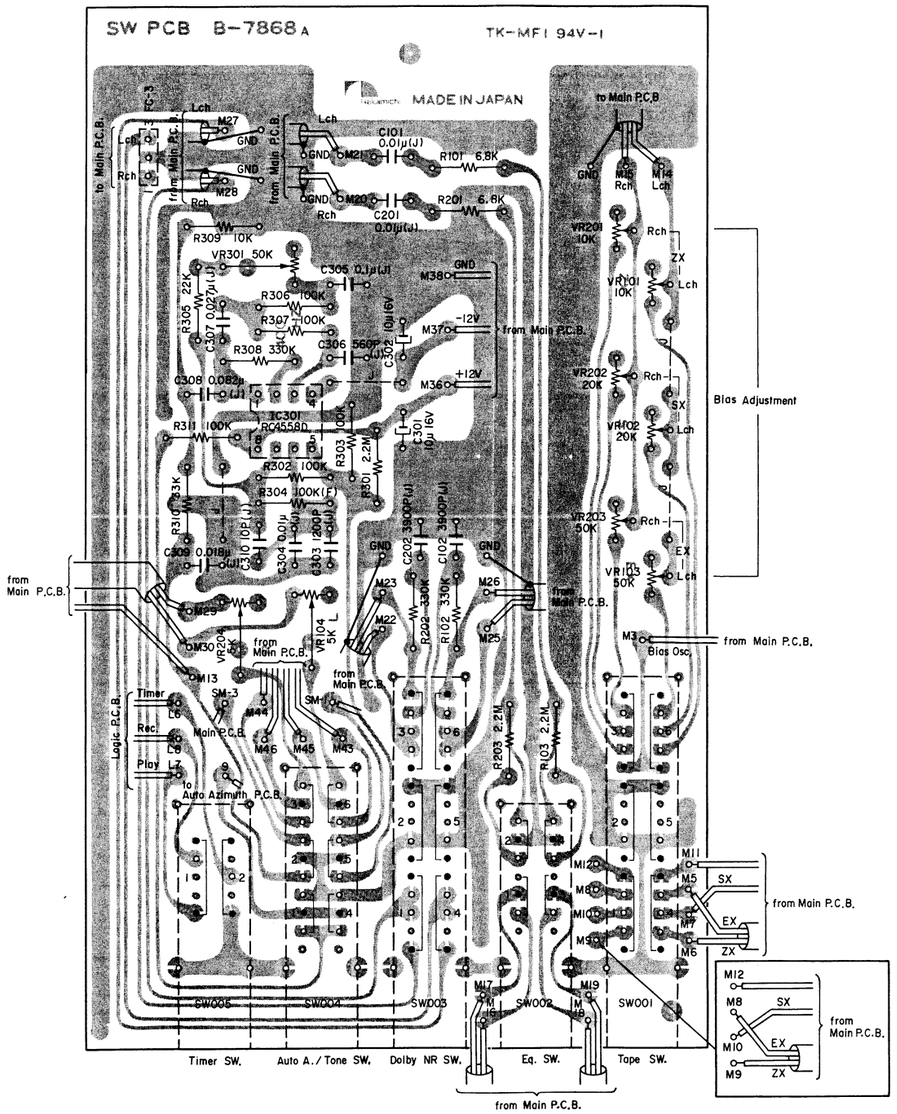


Fig. 7.9 Note: Diode is 1SS53 unless otherwise specified.

7.10. Record Cal. P.C.B. Ass'y

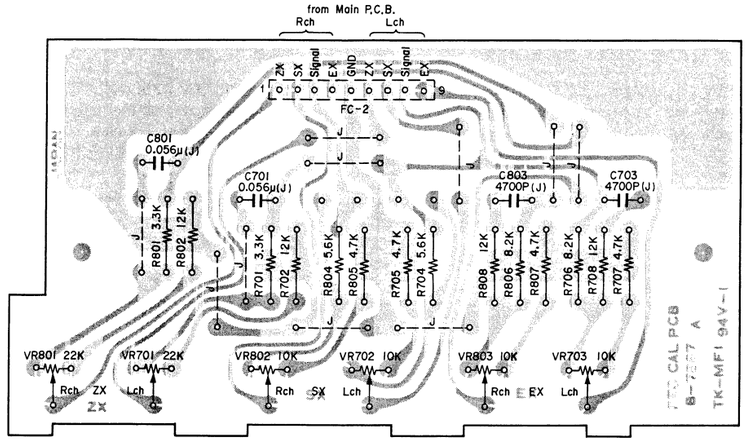


Fig. 7.10

7.11. Volume P.C.B. Ass'y

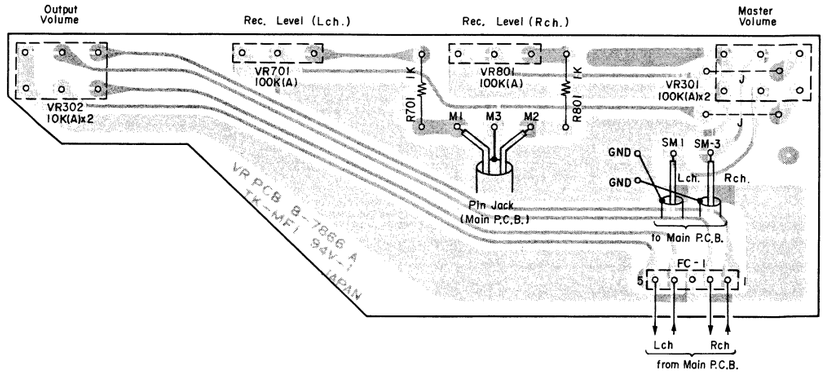


Fig. 7.11

Schematic Ref. No.	Part No.	Description
	BA04190A	**Switch P.C.B. Ass'y**
	— Tone Osc. —	
IC301	0B06124B	IC RC4558D
VR301	0B07237A	Semi-fixed Volume 50K
R301	0B05671A	Carbon Resistor 2.2M ERD-25T J
R302,303 306,307	0B01889A	Carbon Resistor 100K ERD-25T J
R304	0B09305A	Metal Film Resistor 100K SN14K2E F
R305	0B05615A	Carbon Resistor 22K ERD-25T J
R308	0B05627A	Carbon Resistor 330K ERD-25T J
R309	0B01888A	Carbon Resistor 10K ERD-25T J
R310	0B05509A	Carbon Resistor 33K ERD-25T J
C301,302	0B01412A	Electrolytic Capacitor 10μ 16V
C303	0B05687A	Mylar Capacitor 1200P 50V J
C304	0B05681A	Mylar Capacitor 0.01μ 50V J
C305	0B01780A	Mylar Capacitor 0.1μ 50V J
C306	0B09323A	PP Capacitor 560P 100V J
C307	0B09045A	Mylar Capacitor 0.027μ 50V J
C308	0B05685A	Mylar Capacitor 0.082μ 50V J
C309	0B05832A	Mylar Capacitor 0.018μ 50V J
C310	0B09277A	Ceramic Capacitor 10P 50V J
	— Miscellaneous —	
	0B07868A	Switch P.C.B.
VR101,201	0B07162A	Semi-fixed Volume 10K
VR102,202	0B07215A	Semi-fixed Volume 20K
VR103,203	0B07058A	Semi-fixed Volume 50K
VR104,204	0B03831A	Semi-fixed Volume 5K
R101,201	0B01682A	Carbon Resistor 6.8K ERD-25T J
R102,202	0B05627A	Carbon Resistor 330K ERD-25T J
R103,203	0B05671A	Carbon Resistor 2.2M ERD-25T J
R311	0B01889A	Carbon Resistor 100K ERD-25T J
C101,201	0B05681A	Mylar Capacitor 0.01μ 50V J
C102,202	0B01804A	Mylar Capacitor 3900P 50V J
SW001,003	0B07304A	Lever Switch 6-3S
SW002	0B07285A	Lever Switch 4-2S
SW004	0B07320A	Lever Switch 6-2S
SW005	0B07284A	Lever Switch 2-3S
FC3	0B05240A	3P Flat Cable 50mm

Schematic Ref. No.	Part No.	Description
	BA04188A	**Record Cal. P.C.B. Ass'y**
	0B07867A	Record Cal. P.C.B.
VR701,801	0B07276A	Semi-fixed Volume 22K
VR702,703 802,803	0B07319A	Semi-fixed Volume 10K
R701,801	0B01681A	Carbon Resistor 3.3K ERD-25T J
R702,708 802,808	0B09263A	Carbon Resistor 12K ERD-25T J
R704,804	0B01887A	Carbon Resistor 5.6K ERD-25T J
R705,707 805,807	0B01846A	Carbon Resistor 4.7K ERD-25T J
R706,806	0B01856A	Carbon Resistor 8.2K ERD-25T J
C701,801	0B05813A	Mylar Capacitor 0.056μ 50V J
C703,803	0B05652A	Mylar Capacitor 4700P 50V J
FC2	0B05245A	9P Flat Cable 90mm
	BA04175A	**Volume P.C.B. Ass'y**
	0B07866A	Volume P.C.B.
VR301	0B07203A	Volume 100K (A) x 2
VR302	0B07204A	Volume 10K (A) x 2
VR701,801	0B07202A	Volume 100K (A)
R701,801	0B01857A	Carbon Resistor 1K ERD-25T J
FC1	0B05238A	5P Flat Cable 50mm

7.12. Main P.C.B. Ass'y

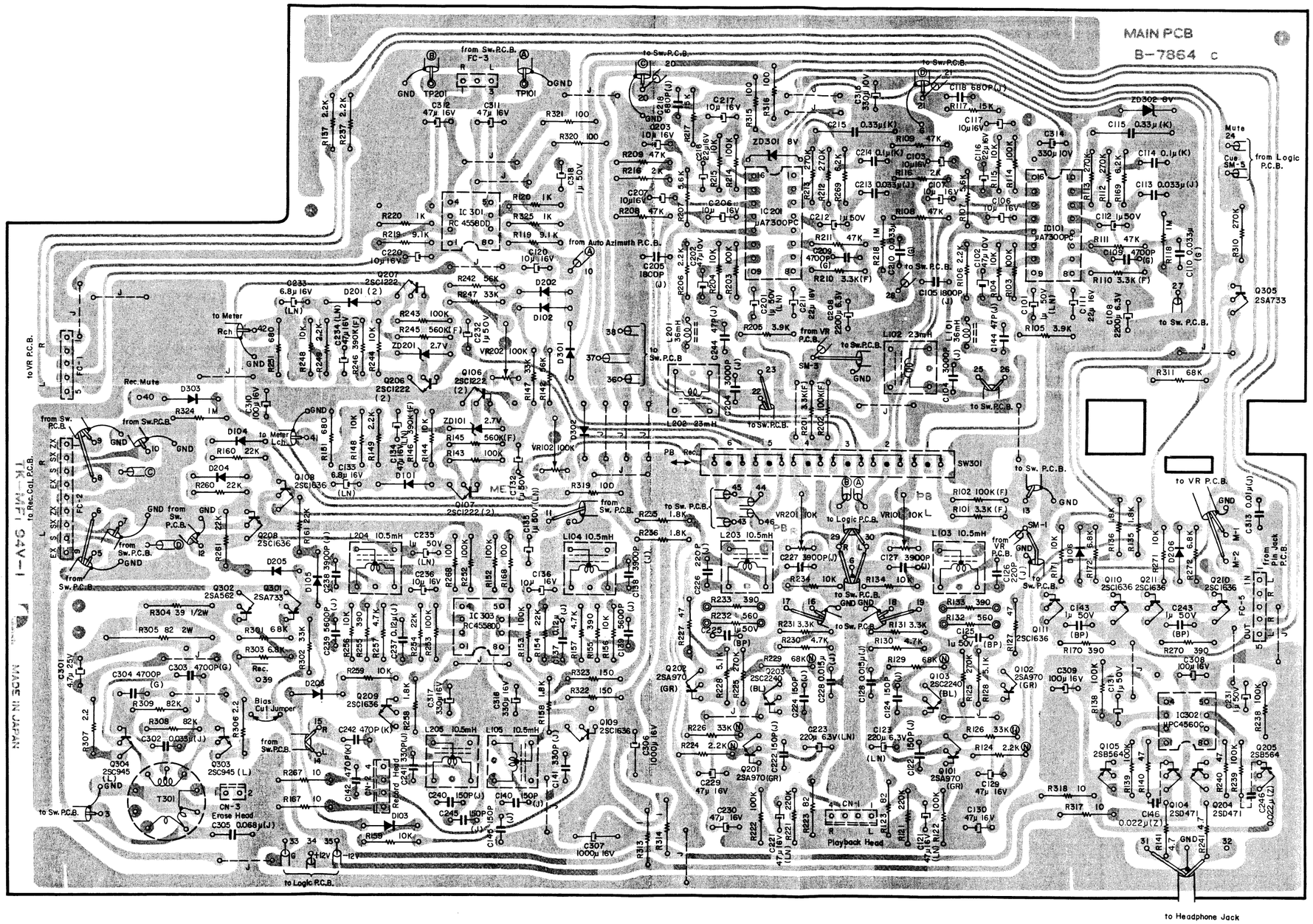


Fig. 7.12

Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description
	BA04191A	**Main P.C.B. Ass'y**
		— PB Eq. Amp. —
Q101,102	0B06180A	Transistor 2SA970 (GR)
201,202		
Q103,203	0B06142A	Transistor 2SC2240 (BL)
L103,203	0B00068A	Trap Coil 10.5mH
VR101,201	0B07236A	Semi-fixed Volume 10K
R121,221	0B05625A	Carbon Resistor 220K ERD-25T J
R122,222	0B01889A	Carbon Resistor 100K ERD-25T J
R123,223	0B05631A	Carbon Resistor 82 ERD-25T J
R124,224	0B09309A	Carbon Resistor 2.2K ERD-25TS J (Noiseless)
R125,225	0B05620A	Carbon Resistor 270K ERD-25T J
R126,226	0B09310A	Carbon Resistor 33K ERD-25TS J (Noiseless)
R127,227	0B01706A	Carbon Resistor 47 ERD-25T J
R128,228	0B09314A	Carbon Resistor 5.1K ERD-25T J
R129,229	0B09311A	Carbon Resistor 68K ERD-25TS J (Noiseless)
R130,230	0B01846A	Carbon Resistor 4.7K ERD-25T J
R131,231	0B01681A	Carbon Resistor 3.3K ERD-25T J
R132,232	0B05575A	Carbon Resistor 560 ERD-25T J
R133,233	0B05691A	Carbon Resistor 390 ERD-25T J
R134,234	0B01888A	Carbon Resistor 10K ERD-25T J
R135,136	0B05614A	Carbon Resistor 1.8K ERD-25T J
235,236		
C121,221	0B09218A	Electrolytic Capacitor 47μ 16V (LN)
C122,124	0B09281A	Ceramic Capacitor 150P 50V K
222,224		
C123,223	0B09151A	Electrolytic Capacitor 220μ 6.3V (LN)
C125,225	0B09187A	Electrolytic Capacitor 1μ 50V (BP)
C126,226	0B09247A	Mica Capacitor 220P 50V J
C127,227	0B01804A	Mylar Capacitor 3900P 50V J
C128,228	0B05557A	Mylar Capacitor 0.015μ 50V J
C129,130	0B01403A	Electrolytic Capacitor 47μ 16V
229,230		
		— Dolby NR —
IC101,201	0B06175A	IC μA7300PC
D301,302	0B06090A	Zener Diode XZ080
L101,201	0B03919B	Inductor 36mH
L102,202	0B03563A	19K Coil 23mH
R101,110	0B09317A	Metal Film Resistor 3.3K SN14K2E F
201,210		
R102,202	0B09305A	Metal Film Resistor 100K SN14K2E F
R103,114	0B01889A	Carbon Resistor 100K ERD-25T J
203,214		
R104,115	0B01888A	Carbon Resistor 10K ERD-25T J
204,215		
R105,205	0B05675A	Carbon Resistor 3.9K ERD-25T J
R106,206	0B05622A	Carbon Resistor 2.2K ERD-25T J
R107,207	0B01887A	Carbon Resistor 5.6K ERD-25T J
R108,109	0B05641A	Carbon Resistor 47K ERD-25T J
111,208		
209,211		
R112,113	0B05620A	Carbon Resistor 270K ERD-25T J
212,213		
R116,216	0B09301A	Carbon Resistor 2K ERD-25T J
R117,217	0B01683A	Carbon Resistor 15K ERD-25T J
R118,218	0B05776A	Carbon Resistor 1M ERD-25T J

Schematic Ref. No.	Part No.	Description
R169,269	0B09271A	Carbon Resistor 6.2K ERD-25T J
R315,316	0B09215A	Fail Safe Type Resistor 100 RDF-25S J
C101,201	0B09223A	Electrolytic Capacitor 1μ 50V (LN)
C102,202	0B01836A	Electrolytic Capacitor 47μ 10V
C103,106	0B01412A	Electrolytic Capacitor 10μ 16V
107,117		
203,206		
207,217		
C104,204	0B09262A	PP Capacitor 3000P 100V J
C105,205	0B01913A	Mylar Capacitor 1800P 50V J
C108,208	0B09257A	Electrolytic Capacitor 2200μ 6.3V
C109,209	0B09191A	PP Capacitor 4700P 100V G
C110,210	0B09240A	PP Capacitor 0.033μ 100V G
C111,116	0B01862A	Electrolytic Capacitor 22μ 16V
211,216		
C112,212	0B01405A	Electrolytic Capacitor 1μ 50V
C113,213	0B05583A	Mylar Capacitor 0.033μ 50V J
C114,214	0B01603A	Mylar Capacitor 0.1μ 50V K
C115,215	0B01602A	Mylar Capacitor 0.33μ 50V K
C118,218	0B09235A	PP Capacitor 680P 100V J
C144,244	0B09242A	Mica Capacitor 47P 50V J
C314,315	0B05841A	Electrolytic Capacitor 330μ 10V
		— Rec. Amp. —
IC303	0B06146A	IC RC4558DD
Q108,109	0B06070A	Transistor 2SC1636
208,209		
Q301	0B06013A	Transistor 2SA733
D103,104	0B06181A	Silicon Diode 1SS53
105,203		
204,205		
R152,153	0B01889A	Carbon Resistor 100K ERD-25T J
252,253		
R154,160	0B05615A	Carbon Resistor 22K ERD-25T J
161,254		
260,261		
R155,255	0B05691A	Carbon Resistor 390 ERD-25T J
R156,159	0B01888A	Carbon Resistor 10K ERD-25T J
256,259		
R157,257	0B01846A	Carbon Resistor 4.7K ERD-25T J
R158,258	0B05614A	Carbon Resistor 1.8K ERD-25T J
R168,268	0B01679A	Carbon Resistor 100 ERD-25T J
R301	0B05692A	Carbon Resistor 68K ERD-25T J
R302	0B05509A	Carbon Resistor 33K ERD-25T J
R322,323	0B09213A	Fail Safe Type Resistor 150 RDF-25S J
R324	0B05776A	Carbon Resistor 1M ERD-25T J
C135,235	0B09223A	Electrolytic Capacitor 1μ 50V (LN)
C136,236	0B01412A	Electrolytic Capacitor 10μ 16V
C137,237	0B05909A	Mylar Capacitor 0.12μ 50V J
C138,238	0B01804A	Mylar Capacitor 3900P 50V J
C139,239	0B05659A	Mylar Capacitor 5600P 50V J
C140,145	0B09246A	Mica Capacitor 150P 50V J
240,245		
C141,241	0B09322A	PP Capacitor 330P 100V J
C316,317	0B01502A	Electrolytic Capacitor 330μ 16V

Schematic Ref. No.	Part No.	Description
		— Line Amp. —
IC301	0B06146A	IC RC4558DD
Q110,111	0B06070A	Transistor 2SC1636
210,211		
Q305	0B06013A	Transistor 2SA733
D106,206	0B06181A	Silicon Diode 1SS53
R119,219	0B05694A	Carbon Resistor 9.1K ERD-25T J
R120,220	0B01857A	Carbon Resistor 1K ERD-25T J
R137,237	0B05622A	Carbon Resistor 2.2K ERD-25T J
R170,270	0B05691A	Carbon Resistor 390 ERD-25 TJ
R171,271	0B01888A	Carbon Resistor 10K ERD-25T J
R172,272	0B01682A	Carbon Resistor 6.8K ERD-25T J
R310	0B05620A	Carbon Resistor 270K ERD-25T J
R311	0B05692A	Carbon Resistor 68K ERD-25T J
R313,314	0B09214A	Fail Safe Type Resistor 1 RDF-25S J
R320,321	0B09215A	Fail Safe Type Resistor 100 RDF-25S J
C120,220	0B01412A	Electrolytic Capacitor 10μ 16V
C143,243	0B09187A	Electrolytic Capacitor 1μ 50V (BP)
C306,307	0B01397A	Electrolytic Capacitor 1000μ 16V
C311,312	0B01403A	Electrolytic Capacitor 47μ 16V
		— Headphone Amp. —
IC302	0B06226A	IC RC4560D
Q104,204	0B06066A	Transistor 2SD471
Q105,205	0B06069A	Transistor 2SB564
R138,139	0B01889A	Carbon Resistor 100K ERD-25T J
238,239		
R140,240	0B01706A	Carbon Resistor 47 ERD-25T J
R141,241	0B09321A	Fail Safe Type Resistor 4.7 RDF-25S J
R317,318	0B09216A	Fail Safe Type Resistor 10 RDF-25S J
C131,231	0B01405A	Electrolytic Capacitor 1μ 50V
C146,246	0B09291A	Ceramic Capacitor 0.022μ 50V Z
C308,309	0B01400A	Electrolytic Capacitor 100μ 16V
		— Bias Osc. —
Q302	0B01426A	Transistor 2SA562
Q303,304	0B01872A	Transistor 2SC945 (L)
T301	0B06613A	Osc. Coil
R167,267	0B05936A	Carbon Resistor 10 ERD-25T J
R303	0B01682A	Carbon Resistor 6.8K ERD-25T J
R304	0B09296A	Fail Safe Type Resistor 39 RDF-½S J
R305	0B09295A	Fail Safe Type Resistor 82 RSF-2B J
R306,307	0B09212A	Fail Safe Type Resistor 2.2 RDF-25S J
R308,309	0B05668A	Carbon Resistor 82K ERD-25T J
C142,242	0B09286A	Ceramic Capacitor 470P 50V K
C301	0B01402A	Electrolytic Capacitor 4.7μ 25V
C302	0B05583A	Mylar Capacitor 0.033μ 50V J
C303,304	0B09191A	PP Capacitor 4700P 100V G
C305	0B09254A	PP Capacitor 0.068μ 100V J
		— Meter Amp. —
Q106,107	0B06062A	Transistor 2SC1222 (2)
206,207		
ZD101,201	0B06191A	Zener Diode 2.7EB
D101,102	0B06181A	Silicon Diode 1SS53
201,202		
301		
VR102,202	0B03832A	Semi-fixed Volume 100K
R142,242	0B05508A	Carbon Resistor 56K ERD-25T J

Schematic Ref. No.	Part No.	Description
R143,243	0B01889A	Carbon Resistor 100K ERD-25T J
R144,148	0B01888A	Carbon Resistor 10K ERD-25T J
244,248		
R145,245	0B09318A	Metal Film Resistor 560K SN14K2E F
R146,246	0B09338A	Metal Film Resistor 390K SN14K2E F
R147,247	0B05509A	Carbon Resistor 33K ERD-25T J
R149,249	0B05622A	Carbon Resistor 2.2K ERD-25T J
R151,251	0B05794A	Carbon Resistor 680 ERD-25T J
R319	0B09215A	Fail Safe Type Resistor 100 RDF-25S J
C132,232	0B01405A	Electrolytic Capacitor 1μ 50V
C133,233	0B09219A	Electrolytic Capacitor 6.8μ 16V (LN)
C134,234	0B09218A	Electrolytic Capacitor 47μ 16V (LN)
C310	0B01400A	Electrolytic Capacitor 100μ 16V
		— Miscellaneous —
	0B07864C	Main P.C.B.
R325	0B01857A	Carbon Resistor 1K ERD-25T J
C313	0B05681A	Mylar Capacitor 0.01μ 50V J
C318	0B01405A	Electrolytic Capacitor 1μ 50V
CN1,2	0B08654A	4P-T Post
CN3	0B08656A	2P-T Post
	0B07267A	Record Switch A302 (1 pce.)
	0B08569C	Record Wire Holder (1 pce.)
	0B08570C	Record Spring Holder (1 pce.)
	0C08144C	Record Spring (1 pce.)
	0E00172A	Washer Toothed Lock 3mm (1 pce.)
	0E00788A	BT Screw M2x8 Philips Pan Head (1 pce.)
	0E00831A	BT Screw M3x10 Philips Pan Head (1 pce.)

7.13. Logic P.C.B. Ass'y

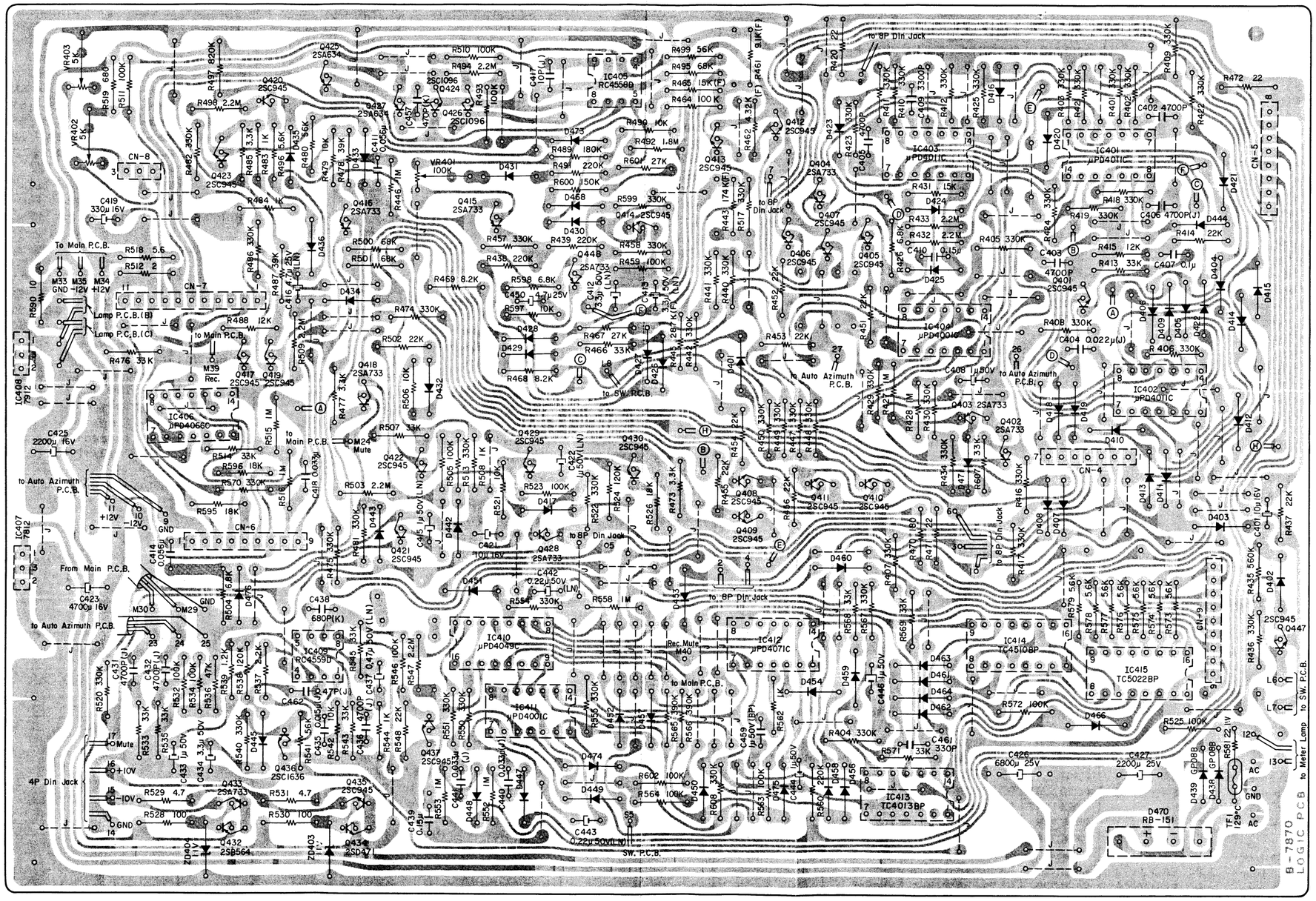


Fig. 7.13

Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description
	BA04192A	Logic P.C.B. Ass'y
	— Logic —	
IC401,402	0B06178A	IC μPD4011C
403		
IC404	0B06143A	IC μPD4001C
IC405	0B06124B	IC μPC4558C
IC406	0B06144A	IC μPD4066C
IC407	0B06192A	Regulator +12V μA7812
IC408	0B06193A	Regulator −12V μA7912
Q401	0B06100A	Transistor 2SC945 (A)
405-414		(21 pcs.)
417		
419-423		
429,430		
435,447		
Q402,403	0B06013A	Transistor 2SA733
404,415		
416,418		
428,433		
448		
Q424,426	0B06020A	Transistor 2SC1096
Q425,427	0B06012A	Transistor 2SA634
Q432	0B06069A	Transistor 2SB564
Q434	0B06066A	Transistor 2SD471
ZD403,404	0B06231A	Zener Diode RD11EB2
D401-436	0B01909A	Silicon Diode 1S1555
442-444		(43 pcs.)
468,471		
473,476		
D438,439	0B06109A	Silicon Diode GP08B
D470	0B06183A	Diode Bridge RB151
VR401	0B03832A	Semi-fixed Volume 100K
VR402,403	0B03831A	Semi-fixed Volume 5K
R401-412	0B05627A	Carbon Resistor 330K ERD-25T J
416-419		(45 pcs.)
421-425		
429,430		
434,436		
440-442		
447-450		
457,458		
474,475		
481,482		
486,513		
517,520		
522,570		
599		
R413,466	0B05509A	Carbon Resistor 33K ERD-25T J
476,507		
514,607		
R414,437	0B05615A	Carbon Resistor 22K ERD-25T J
451-456		(9 pcs.)
502		
R415,488	0B09263A	Carbon Resistor 12K ERD-25T J
R420,471	0B09049A	Fail Safe Type Resistor 22 ERD-14F J
472		
R426,504	0B01682A	Carbon Resistor 6.8K ERD-25T J
598		
R427,428	0B05776A	Carbon Resistor 1M ERD-25T J
446,515		
516		

Schematic Ref. No.	Part No.	Description
R431	0B05698A	Carbon Resistor 1.5K ERD-25T J
R432,433	0B05671A	Carbon Resistor 2.2M ERD-25T J
494,498		
503,509		
R435	0B05784A	Carbon Resistor 560K ERD-25T J
R438,439	0B05625A	Carbon Resistor 220K ERD-25T J
491		
R443	0B09367A	Metal Film Resistor 174K SN14K2E F
R445	0B09366A	Metal Film Resistor 287K SN14K2E F
R459,464	0B01889A	Carbon Resistor 100K ERD-25T J
493,505		
510,511		
523,525		
R461	0B09328A	Metal Film Resistor 9.1K SN14K2E F
R462	0B09365A	Metal Film Resistor 4.32K SN14K2E F
R465	0B09340A	Metal Film Resistor 15K SN64K2E F
R467,601	0B05743A	Carbon Resistor 27K ERD-25T J
R468,469	0B01856A	Carbon Resistor 8.2K ERD-25T J
R470	0B05578A	Carbon Resistor 180 ERD-25T J
R473,477	0B01681A	Carbon Resistor 3.3K ERD-25T J
485		
R478,487	0B01854A	Carbon Resistor 39K ERD-25T J
R479,490	0B01888A	Carbon Resistor 10K ERD-25T J
506,521		
597		
R480,499	0B05508A	Carbon Resistor 56K ERD-25T J
R483,484	0B01857A	Carbon Resistor 1K ERD-25T J
508		
R489	0B05640A	Carbon Resistor 180K ERD-25T J
R492	0B05680A	Carbon Resistor 1.8M ERD-25T J
R495,500	0B05692A	Carbon Resistor 68K ERD-25T J
501		
R496	0B01887A	Carbon Resistor 5.6K ERD-25T J
R497	0B09320A	Carbon Resistor 820K ERD-25T J
R512	0B09381A	Fail Safe Type Resistor 2 RDF-25S J
R518	0B09217A	Fail Safe Type Resistor 5.6 RDF-25S J
R519	0B05794A	Carbon Resistor 680 ERD-25T J
R524	0B05621A	Carbon Resistor 120K ERD-25T J
R526,595	0B05560A	Carbon Resistor 18K ERD-25T J
596		
R528,530	0B09215A	Fail Safe Type Resistor 100 RDF-25S J
R529,531	0B09321A	Fail Safe Type Resistor 4.7 RDF-25S J
R581	0B09378A	Fail Safe Type Resistor 22 RSF-1B J
R590	0B09216A	Fail Safe Type Resistor 10 RDF-25S J
R600	0B05626A	Carbon Resistor 150K ERD-25T J
C401,421	0B01412A	Electrolytic Capacitor 10μ 16V
C402,403	0B05556A	Mylar Capacitor 4700P 50V
405,406		
C404	0B05582A	Mylar Capacitor 0.022μ 50V J
C407	0B00093A	Mylar Capacitor 0.1μ 50V
C408	0B01405A	Electrolytic Capacitor 1μ 50V
C409	0B09166A	Mylar Capacitor 3300P 50V
C410	0B00610A	Mylar Capacitor 0.15μ 50V
C411,414	0B01676A	Mylar Capacitor 0.056μ 50V
C412,413	0B09324A	Electrolytic Capacitor 3.3μ 50V (LN)
C415,422	0B09223A	Electrolytic Capacitor 1μ 50V (LN)
C416	0B09173A	Electrolytic Capacitor 4.7μ 25V (LN)
C417	0B09277A	Ceramic Capacitor 10P 50V J
C418	0B05513A	Mylar Capacitor 0.033μ 50V
C419	0B01502A	Electrolytic Capacitor 330μ 16V
C423	0B09377A	Electrolytic Capacitor 4700μ 16V
C425	0B01406A	Electrolytic Capacitor 2200μ 16V

Schematic Ref. No.	Part No.	Description
C426	0B09374A	Electrolytic Capacitor 6800μ 25V
C427	0B05654A	Electrolytic Capacitor 2200μ 25V
C450	0B01402A	Electrolytic Capacitor 4.7μ 25V
C457	0B09286A	Ceramic Capacitor 470P 50V K
CN4	0B08643A	7P-T Post
CN5	0B08644A	8P-T Post
CN6,9	0B08645A	9P-T Post
CN7	0B08655A	11P-T Post
CN8	0B08653A	3P-T Post
TF1	0B08715A	Thermal Fuse
	— RAMM —	
IC409	0B06127A	IC RC4559D
IC410	0B06250A	IC μPD4049C
IC411	0B06143A	IC μPD4001C
IC412	0B06214A	IC μPD4071C
IC413	0B06213A	IC TC4013BP
IC414	0B06212	IC TC4510BP
IC415	0B06211A	IC TC5022BP
Q436	0B06070A	Transistor 2SC1636
Q437	0B06100A	Transistor 2SC945 (A)
D445	0B06181A	Silicon Diode 1SS53
447-454		(21 pcs.)
456-464		
466,474		
R532,534	0B01889A	Carbon Resistor 100K ERD-25T J
546,563		
564,572		
602		
R533,535	0B05509A	Carbon Resistor 33K ERD-25T J
543,545		
568,569		
571		
R536	0B05641A	Carbon Resistor 47K ERD-25T J
R537	0B05622A	Carbon Resistor 2.2K ERD-25T J
R538	0B05621A	Carbon Resistor 120K ERD-25T J
R539	0B05623A	Carbon Resistor 1.2K ERD-25T J
R540,550	0B05627A	Carbon Resistor 330K ERD-25T J
551,554		
555,567		
608		
R541	0B05508A	Carbon Resistor 56K ERD-25T J
R542	0B01888A	Carbon Resistor 10K ERD-25T J
R544,562	0B01857A	Carbon Resistor 1K ERD-25T J
R547	0B05671A	Carbon Resistor 2.2M ERD-25T J
R548	0B05615A	Carbon Resistor 22K ERD-25T J
R552,553	0B05776A	Carbon Resistor 1M ERD-25T J
558		
R573,574	0B01887A	Carbon Resistor 5.6K ERD-25T J
575,576		
577,578		
579		
R560	0B05625A	Carbon Resistor 220K ERD-25T J
R565,566	0B05676A	Carbon Resistor 390K ERD-25T J
C431,432	0B05652A	Mylar Capacitor 4700P 50V J
436		
C433,444	0B01405A	Electrolytic Capacitor 1μ 50V
446		
C434	0B01863A	Electrolytic Capacitor 3.3μ 50V
C435	0B05557A	Mylar Capacitor 0.015μ 50V J
C437	0B09222A	Electrolytic Capacitor 0.47μ 50V (LN)

Schematic Ref. No.	Part No.	Description
C438	0B09287A	Ceramic Capacitor 680P 50V K
C439	0B00610A	Mylar Capacitor 0.15μ 50V
C440,441	0B05583A	Mylar Capacitor 0.033μ 50V J
C442,443	0B09220A	Electrolytic Capacitor 0.22μ 50V (LN)
C459	0B09187A	Electrolytic Capacitor 1μ 50V (BP)
C461	0B01180A	Ceramic Capacitor 330P 100V
C462	0B09280A	Ceramic Capacitor 47P 50V J
	— Miscellaneous —	
	0B07870C	Logic P.C.B.
	0J04103A	Heat Sink (1 pce.)
	0E00860A	BT Screw M3x6 Philips Binding Head (2 pcs.)
	0E00896A	Screw M3x6 Philips Binding Head (2 pcs.)
	0E00507A	Nut Hex. M3 (2 pcs.)

8. MECHANISM ASS'Y AND PARTS LIST

8.1. Synthesis

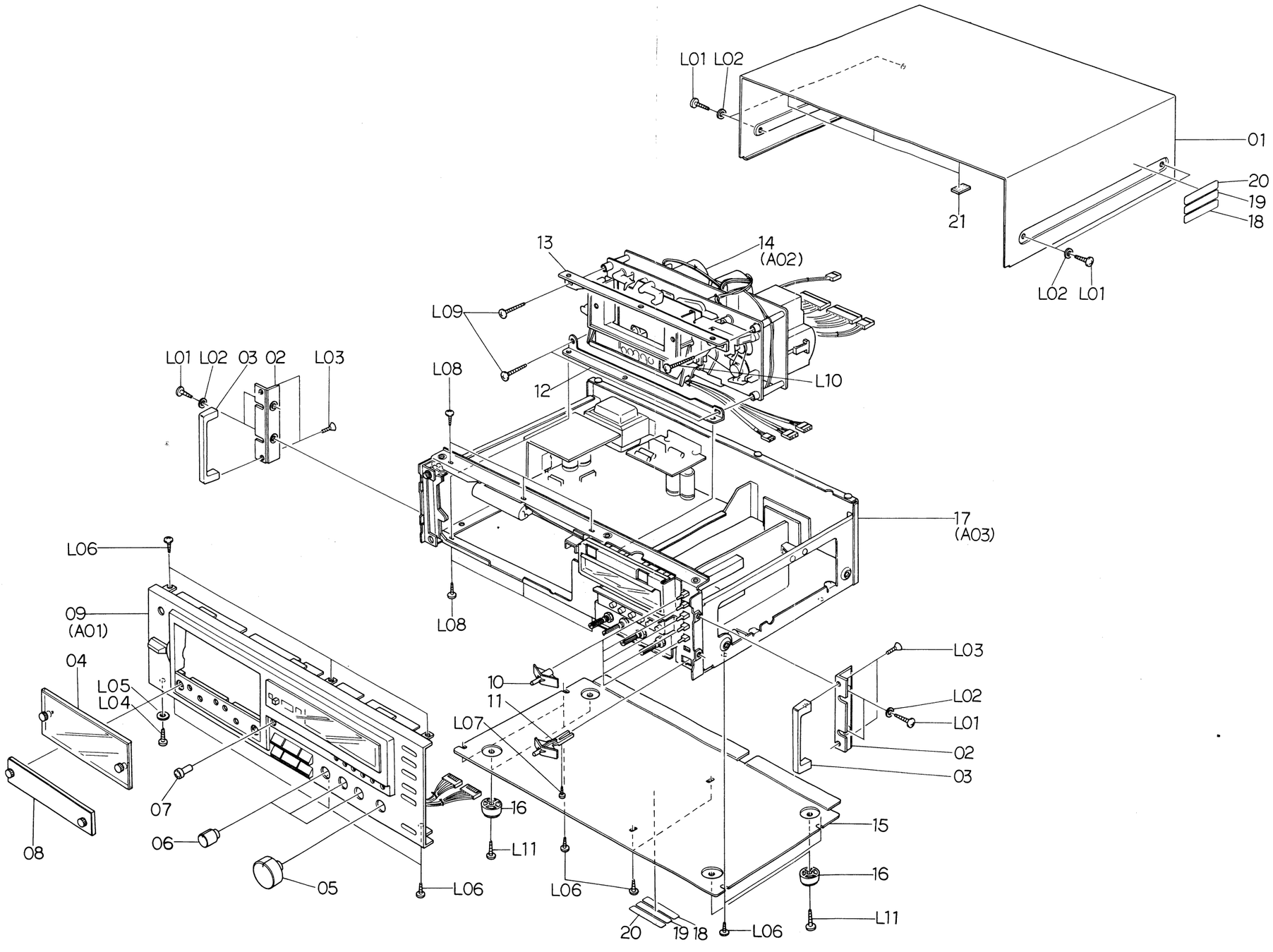


Fig. 8.1

Schematic Ref. No.	Part No.	Description	Q'ty
		Synthesis Serial No.: A30704151 –	
01	0H03723D	Top Cover	1
02	0H03788B	Side Panel B	2
03	0H03763B	Handle B	2
04	HA03882A	Cassette Case Cover Ass'y	1
05	0H03732B	Volume Knob A	1
(05)	0H03733A	Volume Knob Sleeve A	1
06	0H03738B	Volume Knob B	3
(06)	0H03739A	Volume Knob Sleeve B	3
07	0H03725A	Pitch Control Knob	1
08	HA03981A	Azimuth Alignment Cover Ass'y	1
09	HA03980A	Front Panel Ass'y	1
10	HA03838B	Function Switch Knob Ass'y	6
11	0H03741A	Power Switch Knob	1
12	0J04054B	Mechanism Holder B	1
13	0J04053A	Mechanism Holder A	1
14	CA08230A	Mechanism Ass'y 660ZX	1
15	0H03757A	Bottom Cover	1
16	0J03825A	Leg S	4
17	JA03652A	Chassis Ass'y (U.S.A. & Canada)	1
	JA03653A	Chassis Ass'y (Japan)	1
	JA03654A	Chassis Ass'y (220V Class 2)	1
	JA03655A	Chassis Ass'y (Australia)	1
	JA03656A	Chassis Ass'y (UK)	1
	JA03657A	Chassis Ass'y (Others)	1
18	0M03799A	Caution Label G	2
*19	0M03800A	Caution Label H (U.S.A. & Canada)	2
*20	0M03883A	Lamp Caution Label (U.S.A. & Canada)	2
21	0J04080A	Top Cover Himelon	4
L01	0E00915A	BT Screw M4x8 Philips Binding Head (Black Chromate)	8
L02	0E00736A	Washer 4mm (Black Chromate)	8
L03	0E00908A	Screw M4x6 Philips Countersunk	4
L04	0E00921A	BT Screw M3x8 Philips Binding Head (Black Chromate)	1
L05	0E00677A	Washer 3mm (Black Chromate)	1
L06	0E00857A	BT Screw M3x6 Philips Binding Head	12
L07	0E00814A	ST Screw M2x4 Philips Pan Head	1
L08	0E00920A	Screw M3x6 Philips Polywave	6
L09	0E00867A	BT Screw M4x15 Philips Binding Head	3
L10	0E00878A	BT Screw M4x20 Philips Binding Head	1
L11	0E00852A	BT Screw M4x12 Philips Binding Head	4
		*: Depends on the versions.	

Schematic Ref. No.	Part No.	Description	Q'ty
		Synthesis Serial Nos.: A30704141 – A30704150	
01	0H03723D	Top Cover	1
02	0H03788B	Side Panel B	2
03	0H03763B	Handle B	2
04	HA03882A	Cassette Case Cover Ass'y	1
05	0H03732B	Volume Knob A	1
(05)	0H03733A	Volume Knob Sleeve A	1
06	0H03738B	Volume Knob B	3
(06)	0H03739A	Volume Knob Sleeve B	3
07	0H03725A	Pitch Control Knob	1
08	HA03981A	Azimuth Alignment Cover Ass'y	1
09	HA03980A	Front Panel Ass'y	1
10	HA03838B	Function Switch Knob Ass'y	6
11	0H03741A	Power Switch Knob	1
12	0J04054B	Mechanism Holder B	1
13	0J04053A	Mechanism Holder A	1
14	CA08145C	Mechanism Ass'y 660ZX	1
15	0H03757A	Bottom Cover	1
16	0J03825A	Leg S	4
17	JA03652A	Chassis Ass'y (U.S.A. & Canada)	1
	JA03653A	Chassis Ass'y (Japan)	1
	JA03654A	Chassis Ass'y (220V Class 2)	1
	JA03655A	Chassis Ass'y (Australia)	1
	JA03656A	Chassis Ass'y (UK)	1
	JA03657A	Chassis Ass'y (Others)	1
18	0M03799A	Caution Label G	2
*19	0M03800A	Caution Label H (U.S.A. & Canada)	2
*20	0M03883A	Lamp Caution Label (U.S.A. & Canada)	2
21	0J04080A	Top Cover Himelon	4
L01	0E00915A	BT Screw M4x8 Philips Binding Head (Black Chromate)	8
L02	0E00736A	Washer 4mm (Black Chromate)	8
L03	0E00908A	Screw M4x6 Philips Countersunk	4
L04	0E00921A	BT Screw M3x8 Philips Binding Head (Black Chromate)	1
L05	0E00677A	Washer 3mm (Black Chromate)	1
L06	0E00857A	BT Screw M3x6 Philips Binding Head	12
L07	0E00814A	ST Screw M2x4 Philips Pan Head	1
L08	0E00920A	Screw M3x6 Philips Polywave	6
L09	0E00867A	BT Screw M4x15 Philips Binding Head	3
L10	0E00878A	BT Screw M4x20 Philips Binding Head	1
L11	0E00852A	BT Screw M4x12 Philips Binding Head	4
		*: Depends on the versions.	

Schematic Ref. No.	Part No.	Description	Q'ty
		Synthesis Serial Nos.: A30703405 – A30704140	
01	0H03723D	Top Cover	1
02	0H03788B	Side Panel B	2
03	0H03763B	Handle B	2
04	HA03882A	Cassette Case Cover Ass'y	1
05	0H03732B	Volume Knob A	1
(05)	0H03733A	Volume Knob Sleeve A	1
06	0H03738B	Volume Knob B	3
(06)	0H03739A	Volume Knob Sleeve B	3
07	0H03725A	Pitch Control Knob	1
08	HA03981A	Azimuth Alignment Cover Ass'y	1
09	HA03980A	Front Panel Ass'y	1
10	HA03838B	Function Switch Knob Ass'y	6
11	0H03741A	Power Switch Knob	1
12	0J04054B	Mechanism Holder B	1
13	0J04053A	Mechanism Holder A	1
14	CA08145B	Mechanism Ass'y **660ZX**	1
15	0H03757A	Bottom Cover	1
16	0J03825A	Leg S	4
17	JA03652A	Chassis Ass'y (U.S.A. & Canada)	1
	JA03653A	Chassis Ass'y (Japan)	1
	JA03654A	Chassis Ass'y (220V Class 2)	1
	JA03655A	Chassis Ass'y (Australia)	1
	JA03656A	Chassis Ass'y (UK)	1
	JA03657A	Chassis Ass'y (Others)	1
18	0M03799A	Caution Label G	2
* 19	0M03800A	Caution Label H (U.S.A. & Canada)	2
* 20	0M03883A	Lamp Caution Label (U.S.A. & Canada)	2
21	0J04080A	Top Cover Himelon	4
L01	0E00915A	BT Screw M4x8 Philips Binding Head (Black Chromate)	8
L02	0E00736A	Washer 4mm (Black Chromate)	8
L03	0E00908A	Screw M4x6 Philips Countersunk	4
L04	0E00921A	BT Screw M3x8 Philips Binding Head (Black Chromate)	1
L05	0E00677A	Washer 3mm (Black Chromate)	1
L06	0E00857A	BT Screw M3x6 Philips Binding Head	12
L07	0E00814A	ST Screw M2x4 Philips Pan Head	1
L08	0E00920A	Screw M3x6 Philips Polywave	6
L09	0E00867A	BT Screw M4x15 Philips Binding Head	3
L10	0E00878A	BT Screw M4x20 Philips Binding Head	1
L11	0E00852A	BT Screw M4x12 Philips Binding Head	4
		*: Depends on the versions.	

Schematic Ref. No.	Part No.	Description	Q'ty
		Synthesis Serial Nos.: A30701001 – A30703404	
01	0H03723D	Top Cover	1
02	0H03788B	Side Panel B	2
03	0H03763B	Handle B	2
04	HA03882A	Cassette Case Cover Ass'y	1
05	0H03732B	Volume Knob A	1
(05)	0H03733A	Volume Knob Sleeve A	1
06	0H03738B	Volume Knob B	3
(06)	0H03739A	Volume Knob Sleeve B	3
07	0H03725A	Pitch Control Knob	1
08	HA03981A	Azimuth Alignment Cover Ass'y	1
09	HA03980A	Front Panel Ass'y	1
10	HA03838B	Function Switch Knob Ass'y	6
11	0H03741A	Power Switch Knob	1
12	0J04054B	Mechanism Holder B	1
13	0J04053A	Mechanism Holder A	1
14	CA08145A	Mechanism Ass'y **660ZX**	1
15	0H03757A	Bottom Cover	1
16	0J03825A	Leg S	4
17	JA03652A	Chassis Ass'y (U.S.A. & Canada)	1
	JA03653A	Chassis Ass'y (Japan)	1
	JA03654A	Chassis Ass'y (220V Class 2)	1
	JA03655A	Chassis Ass'y (Australia)	1
	JA03656A	Chassis Ass'y (UK)	1
	JA03657A	Chassis Ass'y (Others)	1
18	0M03799A	Caution Label G	2
* 19	0M03800A	Caution Label H (U.S.A. & Canada)	2
* 20	0M03883A	Lamp Caution Label (U.S.A. & Canada)	2
21	0J04080A	Top Cover Himelon	4
L01	0E00915A	BT Screw M4x8 Philips Binding Head (Black Chromate)	8
L02	0E00736A	Washer 4mm (Black Chromate)	8
L03	0E00908A	Screw M4x6 Philips Countersunk	4
L04	0E00921A	BT Screw M3x8 Philips Binding Head (Black Chromate)	1
L05	0E00677A	Washer 3mm (Black Chromate)	1
L06	0E00857A	BT Screw M3x6 Philips Binding Head	12
L07	0E00814A	ST Screw M2x4 Philips Pan Head	1
L08	0E00920A	Screw M3x6 Philips Polywave	6
L09	0E00867A	BT Screw M4x15 Philips Binding Head	3
L10	0E00878A	BT Screw M4x20 Philips Binding Head	1
L11	0E00852A	BT Screw M4x12 Philips Binding Head	4
		*: Depends on the versions.	

8.2. Front Panel Ass'y (A01)

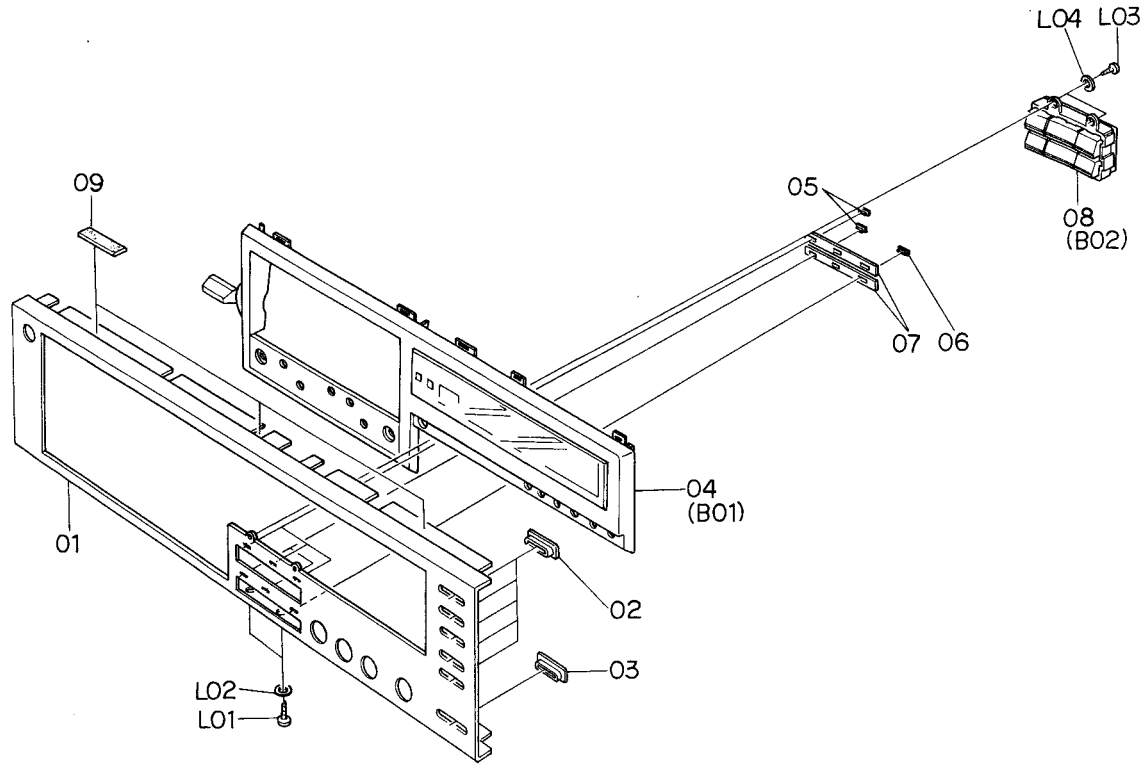


Fig. 8.2

Schematic Ref. No.	Part No.	Description	Q'ty
A01	**HA03980A**	**Front Panel Ass'y** Serial No.: A30701001 –	**1**
01	0H03822A	Front Panel	1
02	0H03746A	Function Switch Escutcheon	
03	0H03747C	Power Switch Escutcheon	1
04	HA03951B	Front Panel Escutcheon Ass'y	1
05	0H03744B	Green Lens	5
06	0H03745B	Orange Lens	1
07	0J04059B	Light Intercepting Seal A	2
08	HA03823A	Control Button Ass'y	1
09	0H03781A	Cushion	
L01	0E00825A	BT Screw M2.6x8 Philips Binding Head	2
L02	0E00912A	Washer FT25	2
L03	0E00794A	BT Screw M2x5 Philips Pan Head	2
L04	0E00117A	Washer 2mm	2

8.3. Mechanism Ass'y 660ZX (A02)

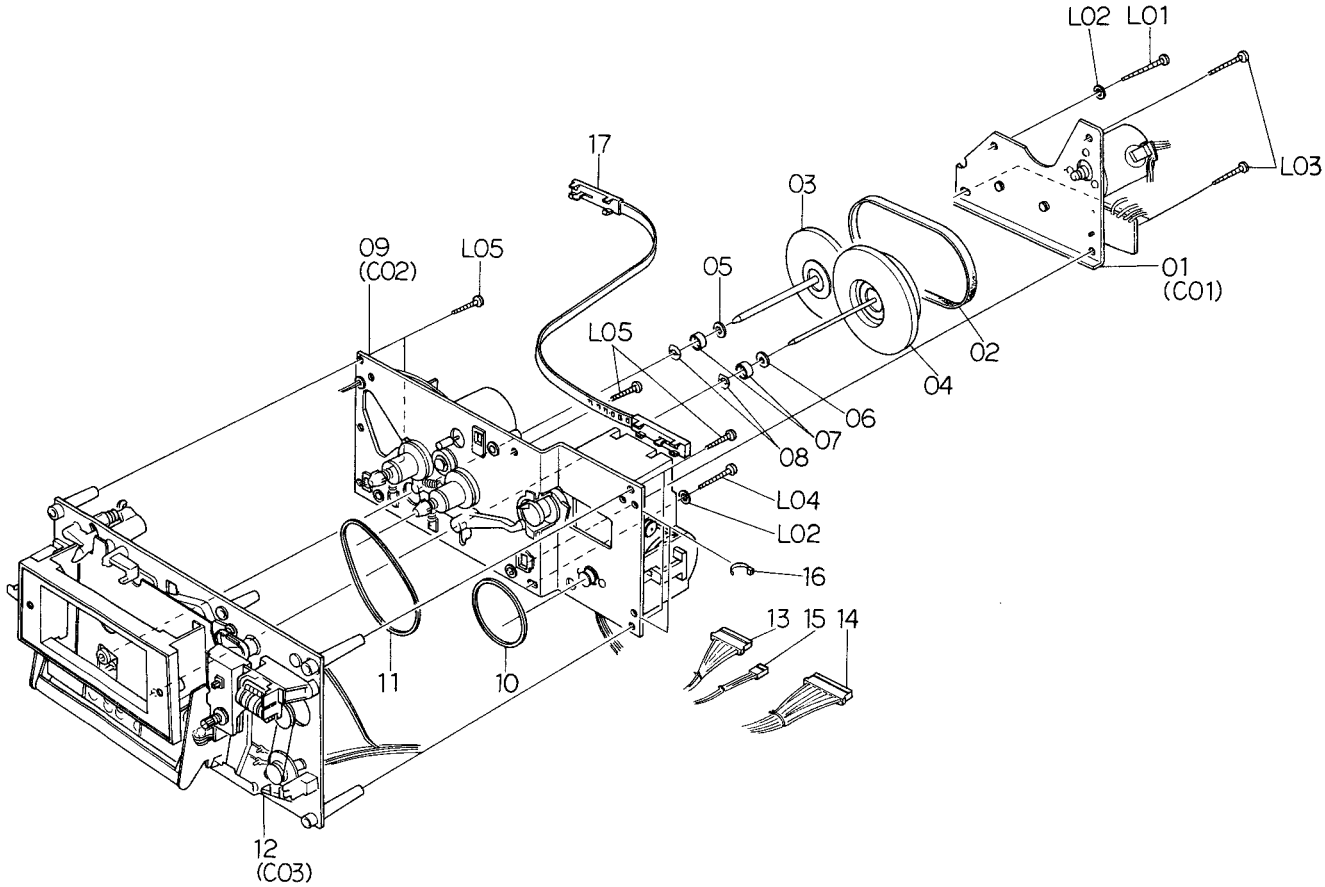


Fig. 8.3

Schematic Ref. No.	Part No.	Description	Q'ty
A02	CA08230A	**Mechanism Ass'y 660ZX** Serial No.: A30704151 –	1
01	CA08156A	Flywheel Holder Ass'y	1
02	0C08096C	Capstan Belt	1
03	CA08173A	Supply Flywheel Ass'y D	1
04	CA08015A	Take-up Flywheel Ass'y	1
05	0C08021B	Thrust Washer 3.1mm	1
06	0C08020B	Thrust Washer 2.6mm	1
07	0C08069C	Flange Thrust Cap	2
08	0C08022B	Flange Thrust Spring	2
09	CA08235A	Sub Mechanism Chassis Ass'y	1
10	0C08099B	Control Motor Belt	1
11	0C08098B	Counter Belt B	1
12	CA08220A	Main Mechanism Chassis Ass'y	1
13	0B08650B	9P-H Connector	1
14	0B08651D	11P-H Connector	1
15	0B08652C	3P-H Connector	1
16	0B08515A	Insh-Lock	15
17	0C08237A	Azimuth Alignment Wire	1
–	0M04154A	Mechanism Serial No. Seal	1
L01	0E00834A	BT Screw M3x30 Philips Pan Head	1
L02	0E00178A	Washer 3mm	2
L03	0E00833A	BT Screw M3x20 Philips Pan Head	3
L04	0E00835A	BT Screw M3x25 Philips Pan Head	1
L05	0E00883A	BT Screw M3x18 Philips Pan Head	5

Schematic Ref. No.	Part No.	Description	Q'ty
A02	CA08145C	**Mechanism Ass'y 660ZX** Serial Nos.: A30704141 – A30704150	1
01	CA08156A	Flywheel Holder Ass'y	1
02	0C08096C	Capstan Belt	1
03	CA08173A	Supply Flywheel Ass'y D	1
04	CA08015A	Take-up Flywheel Ass'y	1
05	0C08021B	Thrust Washer 3.1mm	1
06	0C08020B	Thrust Washer 2.6mm	1
07	0C08069C	Flange Thrust Cap	2
08	0C08022B	Flange Thrust Spring	2
09	CA08202A	Sub Mechanism Chassis Ass'y	1
10	0C08099B	Control Motor Belt	1
11	0C08098B	Counter Belt B	1
12	CA08210A	Main Mechanism Chassis Ass'y	1
13	0B08650B	9P-H Connector	1
14	0B08651D	11P-H Connector	1
15	0B08652C	3P-H Connector	1
16	0B08515A	Insh-Lock	15
17	0C08237A	Azimuth Alignment Wire	1
–	0M04154A	Mechanism Serial No. Seal	1
L01	0E00834A	BT Screw M3x30 Philips Pan Head	1
L02	0E00178A	Washer 3mm	2
L03	0E00833A	BT Screw M3x20 Philips Pan Head	3
L04	0E00835A	BT Screw M3x25 Philips Pan Head	1
L05	0E00883A	BT Screw M3x18 Philips Pan Head	5

Schematic Ref. No.	Part No.	Description	Q'ty
A02	CA08145B	**Mechanism Ass'y 660ZX** Serial Nos.: A30703405 – A30704140	1
01	CA08156A	Flywheel Holder Ass'y	1
02	0C08096C	Capstan Belt	1
03	CA08173A	Supply Flywheel Ass'y D	1
04	CA08015A	Take-up Flywheel Ass'y	1
05	0C08021B	Thrust Washer 3.1mm	1
06	0C08020B	Thrust Washer 2.6mm	1
07	0C08069C	Flange Thrust Cap	2
08	0C08022B	Flange Thrust Spring	2
09	CA08146A	Sub Mechanism Chassis Ass'y	1
10	0C08099B	Control Motor Belt	1
11	0C08098B	Counter Belt B	1
12	CA08179A	Main Mechanism Chassis Ass'y	1
13	0B08650B	9P-H Connector	1
14	0B08651D	11P-H Connector	1
15	0B08652C	3P-H Connector	1
16	0B08515A	Insh-Lock	15
17	0C08237A	Azimuth Alignment Wire	1
–	0M04154A	Mechanism Serial No. Seal	1
L01	0E00834A	BT Screw M3x30 Philips Pan Head	1
L02	0E00178A	Washer 3mm	2
L03	0E00833A	BT Screw M3x20 Philips Pan Head	3
L04	0E00835A	BT Screw M3x25 Philips Pan Head	1
L05	0E00883A	BT Screw M3x18 Philips Pan Head	5

Schematic Ref. No.	Part No.	Description	Q'ty
A02	CA08145A	**Mechanism Ass'y 660ZX** Serial Nos.: A30701001 – A30703404	1
01	CA08156A	Flywheel Holder Ass'y	1
02	0C08096C	Capstan Belt	1
03	CA08014A	Supply Flywheel Ass'y	1
04	CA08015A	Take-up Flywheel Ass'y	1
05	0C08021B	Thrust Washer 3.1mm	1
06	0C08020B	Thrust Washer 2.6mm	1
07	0C08069C	Flange Thrust Cap	2
08	0C08022B	Flange Thrust Spring	2
09	CA08146A	Sub Mechanism Chassis Ass'y	1
10	0C08099B	Control Motor Belt	1
11	0C08098B	Counter Belt B	1
12	CA08153A	Main Mechanism Chassis Ass'y	1
13	0B08650B	9P-H Connector	1
14	0B08651D	11P-H Connector	1
15	0B08652C	3P-H Connector	1
16	0B08515A	Insh-Lock	15
17	0C08237A	Azimuth Alignment Wire	1
–	0M04154A	Mechanism Serial No. Seal	1
L01	0E00834A	BT Screw M3x30 Philips Pan Head	1
L02	0E00178A	Washer 3mm	2
L03	0E00833A	BT Screw M3x20 Philips Pan Head	3
L04	0E00835A	BT Screw M3x25 Philips Pan Head	1
L05	0E00883A	BT Screw M3x18 Philips Pan Head	5

Schematic Ref. No.	Part No.	Description	Q'ty
A03	JA03652A	**Chassis Ass'y (U.S.A. & Canada)**	1
	JA03653A	**Chassis Ass'y (Japan)**	1
	JA03654A	**Chassis Ass'y (220V Class 2)**	1
	JA03655A	**Chassis Ass'y (Australia)**	1
	JA03656A	**Chassis Ass'y (UK)**	1
	JA03657A	**Chassis Ass'y (Others)**	1
		Serial No.: A30701001 –	
01	0B08716A	Level Meter	1
02	0H03829B	Meter Holder	1
03	JA03661A	Record Calibration Ass'y	1
04	JA03658A	Volume Holder Ass'y	1
05	JA03659A	Headphone Jack Ass'y	1
06	JA03600A	Reflector Ass'y	1
07	JA03602A	Counter Lamp Ass'y	1
08	0J04034F	Front Chassis	1
09	BA04190A	Switch P.C.B. Ass'y	1
10	BA04191A	Main P.C.B. Ass'y	1
11	BA04192A	Logic P.C.B. Ass'y	1
12	BA04207A	Auto Azimuth P.C.B. Ass'y	1
13	0J04033C	Side Chassis Right	1
14	JA03592A	Power Switch Holder Ass'y (U.S.A., Canada & Others)	1
	JA03595A	Power Switch Holder Ass'y (Japan)	1
	JA03594A	Power Switch Holder Ass'y (220V Class 2, Australia & UK)	1
15	0J04055B	Switch P.C.B. Holder	1
16	0J04032D	Center Chassis	1
17	0J04031B	Side Chassis Left	1
18	HA03945A	Rear Panel Ass'y (U.S.A. & Canada)	1
	HA03946A	Rear Panel Ass'y (Japan)	1
	HA03950A	Rear Panel Ass'y (220V Class 2)	1
	HA03949A	Rear Panel Ass'y (Australia)	1
	HA03948A	Rear Panel Ass'y (UK)	1
	HA03947A	Rear Panel Ass'y (Others)	1
19	0J04062B	Insulator	2
20	0B08515A	Insu-Lock	23
21	0J04064A	Free Bushing 85mm	1
* 22	0M03700A	Earth Mark Label	1
23	0B08580A	Wire Holder 161	1
L01	0E00857A	BT Screw M3x6 Philips Binding Head	36
L02	0E00868A	BT Screw M3x8 Philips Binding Head	6
L03	0E00859A	BT Screw M2.6x6 Philips Binding Head	3
L04	0E00622A	Screw M3x5 Philips Pan Head (2A)	6
L05	0E00860A	BT Screw M3x6 Philips Binding Head (Black Chromate)	6
* L06	0E00521A	Screw M3x8 Philips Pan Head	1
* L07	0E00507A	Nut Hex. M3	1
* L08	0E00581A	Washer 3mm (Spring)	1
* L09	0E00037A	Earth Lug B-5	1
		*: Depends on the versions.	

Schematic Ref. No.	Part No.	Description	Q'ty
B01	HA03951B	**Front Panel Escutcheon Ass'y**	1
		Serial No.: A30701001 –	
01	HA03982C	Front Panel Escutcheon Sub Ass'y	1
02	0H03722B	Display Glass	1
03	0H03826B	Display Glass Hold Plate	1
04	BA04209A	RAMM P.C.B. Ass'y	1
05	0H03830A	LED Filter	1
06	0J04050A	Counter Escutcheon Holder	1
07	0H03749A	Memory Switch Knob	1
08	0J04043A	Memory Switch Knob Spring	1
09	0H03743B	Counter Reset Knob Holder	1
10	0H03750A	Counter Reset Knob	1
11	0J04042A	Counter Reset Knob Spring	1
12	0H03724F	Eject Lever	1
13	0H03762A	Eject Lever Spring	1
14	0J04057B	Eject Lever Cushion	1
L01	0E00874A	Stopper Ring CS 2mm	5
L02	0E00854A	BT Screw M2.6x6 Philips Pan Head	4
L03	0E00890A	C-Ring 2mm	1
L04	0E00837A	Stopper Ring 3mm	1
B02	HA03823A	**Control Button Ass'y**	1
		Serial No.: A30701001 –	
01	0H03726B	Control Button Stop	1
02	0H03727B	Control Button Play	1
03	0H03728B	Control Button F.F.	1
04	0H03729B	Control Button Rewind	1
05	0H03730B	Control Button Pause	1
06	0H03731B	Control Button Record	1
07	0J04044C	Control Button Holder	1
08	0J04045B	Control Button Shaft	2
09	0J04046A	Control Button Spring	6
10	0J04052B	Spring Stopper	6
11	0J04099A	Control Button Himelon	2
12	BA04071A	Control Switch P.C.B. Ass'y	1
L01	0E00792A	BT Screw M2.6x6 Philips Pan Head	6
L02	0J04061A	Washer FT20	8
C01	CA08156A	**Flywheel Holder Ass'y**	1
		Serial No.: A30701001 –	
01	0C08013I	Flywheel Holder	1
02	0C08238A	Capstan Motor	1
03	0C08079G	Capstan Motor Pulley	1
04	–	Speed Cal. P.C.B. Ass'y (incorporated in the Capstan Motor)	(1)
L01	0E00226A	Screw M2.6x4 Philips Pan Head	3
L02	0C08068C	Thrust Screw	2
L03	0C03857A	Lock Nut	2
L04	0E00862A	BT Screw M3x6 Philips Pan Head	1

8.4. Chassis Ass'y (A03)

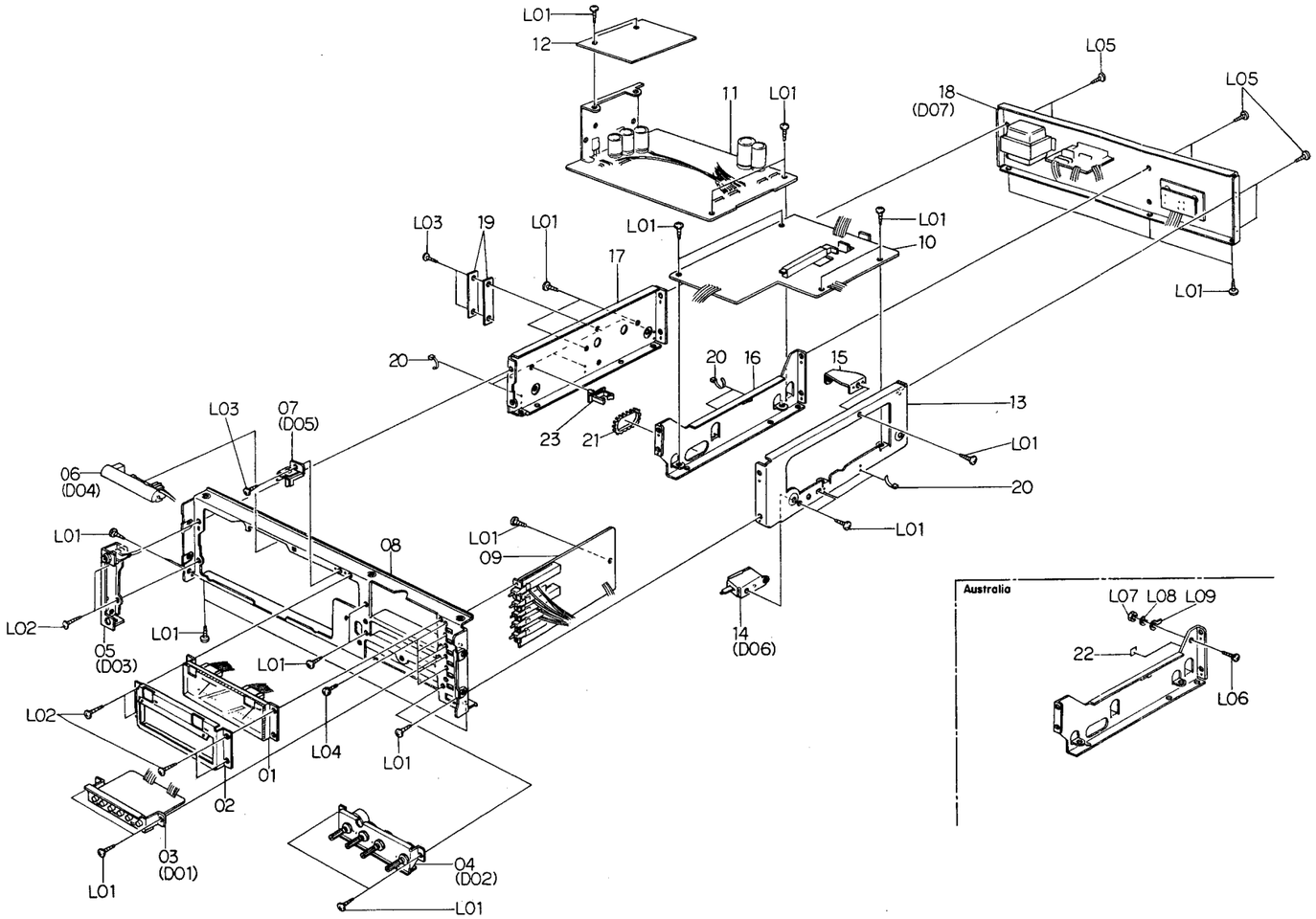


Fig. 8.4

8.5. Front Panel Escutcheon Ass'y (B01)

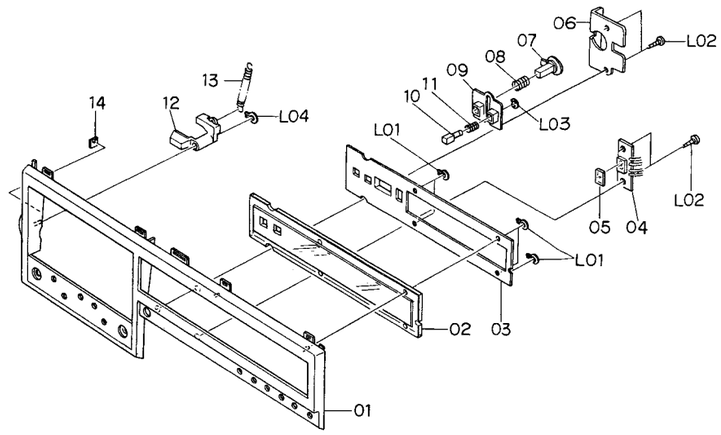


Fig. 8.5

8.6. Control Button Ass'y (B02)

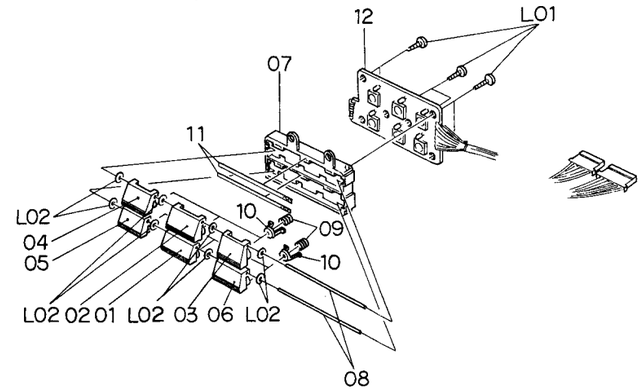


Fig. 8.6

8.7. Flywheel Holder Ass'y (C01)

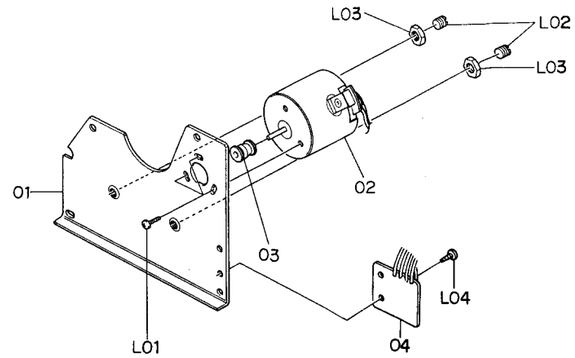


Fig. 8.7

8.8. Sub Mechanism Chassis Ass'y (C02)

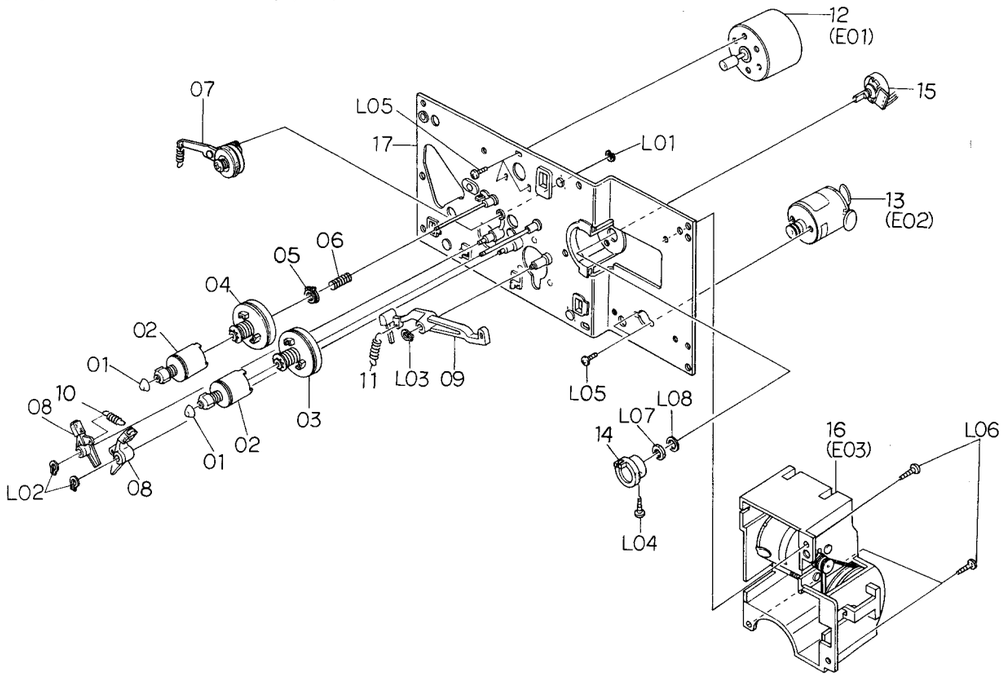


Fig. 8.8.1 Serial No.: A30704151 –

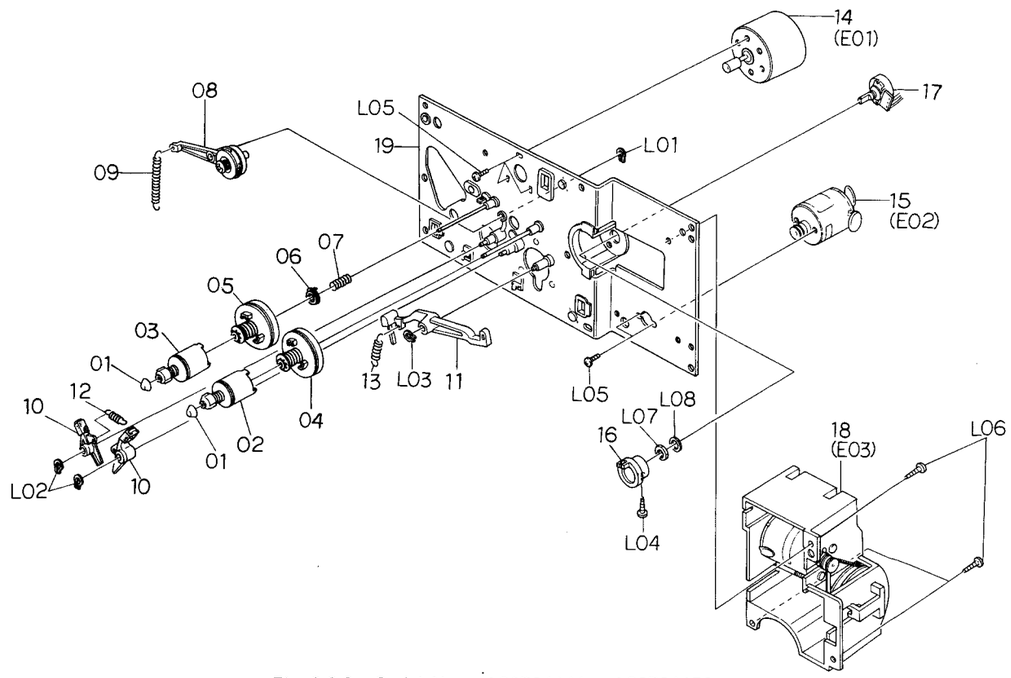


Fig. 8.8.2 Serial Nos.: A30704141 – A30704150

Schematic Ref. No.	Part No.	Description	Q'ty
C02	CA08235A	**Sub Mechanism Chassis Ass'y** Serial No.: A30704151 –	1
01	0C08039B	Reel Hub Head	2
02	CA08038C	Reel Hub B Ass'y	2
03	CA08037A	Reel Hub Take-up Ass'y	1
04	CA08064A	Reel Hub Supply Ass'y	1
05	CA08039A	Back Tension Ass'y	1
06	0C08178A	Back Tension Spring	1
07	CA08193A	Idler Ass'y	1
08	CA08042A	Brake Ass'y	2
09	0C08030C	Brake Drive Arm	1
10	0C08129A	Brake Arm Spring	1
11	0C08128A	Brake Drive Arm Spring	1
12	CA08117B	Reel Motor Ass'y	1
13	CA08034A	Control Motor Ass'y	1
14	0C08053B	Volume Coupler	1
15	0B07240A	Volume Control 10kΩ (B)	1
16	CA08148A	Azimuth Alignment Motor Ass'y	1
17	CA08041A	Sub Chassis Ass'y	1
L01	0E00698A	E-Ring 2.5mm	1
L02	0E00837A	Stopper Ring 3mm	2
L03	0E00838A	Stopper Ring 4mm	1
L04	0E00859A	BT Screw M2.6x6 Philips Binding Head	1
L05	0E00226A	Screw M2.6x4 Philips Pan Head	5
L06	0E00846A	BT Screw M3x8 Philips Pan Head	3
L07	–	Volume Nut	(1)
L08	–	Volume Washer	(1)

Schematic Ref. No.	Part No.	Description	Q'ty
C02	CA08202A	**Sub Mechanism Chassis Ass'y** Serial Nos.: A30704141 – A30704150	1
01	0C08039B	Reel Hub Head	2
02	CA08038B	Reel Hub B Ass'y	1
03	CA08197A	Reel Hub B Ass'y	1
04	CA08037A	Reel Hub Take-up Ass'y	1
05	CA08064A	Reel Hub Supply Ass'y	1
06	CA08039A	Back Tension Ass'y	1
07	0C08178A	Back Tension Spring	1
08	CA08040A	Idler Ass'y	1
09	0C08127B	Idler Arm Spring	1
10	CA08042A	Brake Ass'y	2
11	0C08030C	Brake Drive Arm	1
12	0C08129A	Brake Arm Spring	1
13	0C08128A	Brake Drive Arm Spring	1
14	CA08117B	Reel Motor Ass'y	1
15	CA08034A	Control Motor Ass'y	1
16	0C08053B	Volume Coupler	1
17	0B07240A	Volume Control 10kΩ (B)	1
18	CA08148A	Azimuth Alignment Motor Ass'y	1
19	CA08041A	Sub Chassis Ass'y	1
L01	0E00842A	Stopper Ring 2mm	1
L02	0E00837A	Stopper Ring 3mm	2
L03	0E00838A	Stopper Ring 4mm	1
L04	0E00859A	BT Screw M2.6x6 Philips Binding Head	1
L05	0E00226A	Screw M2.6x4 Philips Pan Head	5
L06	0E00846A	BT Screw M3x8 Philips Pan Head	3
L07	–	Volume Nut	(1)
L08	–	Volume Washer	(1)

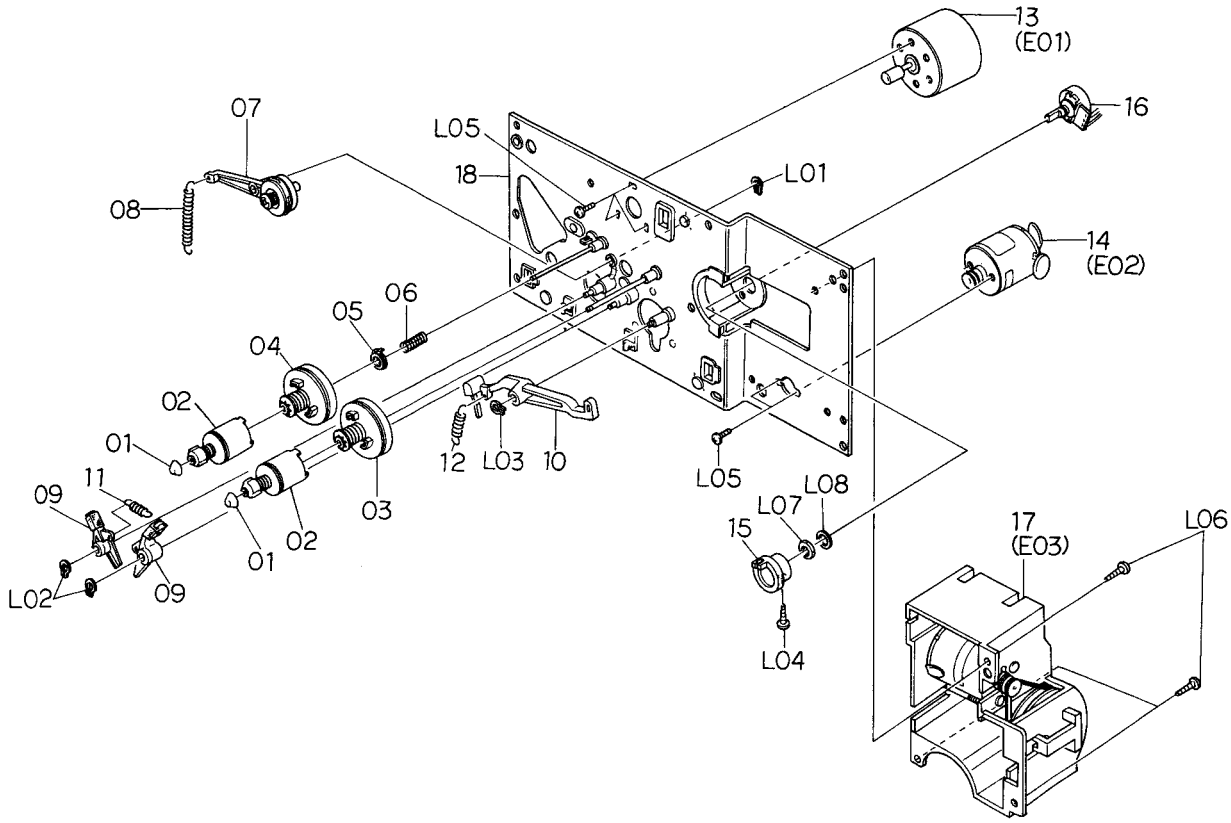


Fig. 8.8.3 Serial Nos.: A30701001 – A30704140

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
C02	CA08146A	**Sub Mechanism Chassis Ass'y** Serial Nos.: A30701001 – A30704140	1	L04	0E00859A	BT Screw M2.6x6 Philips Binding Head	1
				L05	0E00226A	Screw M2.6x4 Philips Pan Head	5
				L06	0E00846A	BT Screw M3x8 Philips Pan Head	3
01	0C08039B	Reel Hub Head	2	L07	–	Volume Nut	(1)
02	CA08038B	Reel Hub B Ass'y	2	L08	–	Volume Washer	(1)
03	CA08037A	Reel Hub Take-up Ass'y	1				
04	CA08064A	Reel Hub Supply Ass'y	1				
05	CA08039A	Back Tension Ass'y	1				
06	0C08178A	Back Tension Spring	1				
07	CA08040A	Idler Ass'y	1				
08	0C08127B	Idler Arm Spring	1				
09	CA08042A	Brake Ass'y	2				
10	0C08030C	Brake Drive Arm	1				
11	0C08129A	Brake Arm Spring	1				
12	0C08128A	Brake Drive Arm Spring	1				
13	CA08117B	Reel Motor Ass'y	1				
14	CA08034A	Control Motor Ass'y	1				
15	0C08053B	Volume Coupler	1				
16	0B07240A	Volume Control 10kΩ (B)	1				
17	CA08148A	Azimuth Alignment Motor Ass'y	1				
18	CA08041A	Sub Chassis Ass'y	1				
L01	0E00842A	Stopper Ring 2mm	1				
L02	0E00837A	Stopper Ring 3mm	2				
L03	0E00838A	Stopper Ring 4mm	1				

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
C03	CA08210A	**Main Mechanism Chassis Ass'y** Serial No.: A30704141 –	1	L11	0E00879A	BT Screw M2x15 Philips Pan Head	1
				L12	0E00838A	Stopper Ring 4mm	3
				L13	0E00846A	BT Screw M3x8 Philips Pan Head	3
01	CA08125A	Cassette Case Holder L Ass'y	1	L14	0E00865A	BT Screw M3x10 Philips Binding Head	2
02	0C08151A	Lid Arm Spring Tube	1				
03	CA08022A	Cassette Case Holder R Ass'y	1	L15	0E00895A	Earth Lug 3mm	2
04	CA08163A	Cassette Case Ass'y	1	L16	0E00859A	BT Screw M2.6x6 Philips Binding Head	1
05	0C08019I	Cover Plate	1				
06	0M03977A	Cassette Viewer Label	1	L17	0C08255A	Washer 2.6mm	1
07	CA08147A	Head Mount Base Ass'y	1				
08	0C08121A	Supply Pressure Roller Spring	1				
09	CA08053B	Supply Pressure Roller Ass'y	1				
10	0C08122B	Supply Pressure Roller Thrust Spring	1				
11	CA08079B	Take-up Pressure Roller Ass'y	1				
12	0C08183B	Take-up Pressure Roller Thrust Spring	1				
13	CA08104A	Head Base Ass'y D	1				
14	0C08182A	Pressure Roller Drive Bar B	1				
15	0C08086B	Head Base Roller	3				
16	0C08050B	Record Sensor	1				
17	0C08051E	Cassette Hold Arm	1				
18	0C08120A	Cassette Hold Arm Spring	1				
19	CA08027A	Head Base Drive Arm Ass'y	1				
20	0C08143C	Head Base Drive Arm Spring	1				
21	CA08025A	Record Arm Ass'y	1				
22	0C08038A	Record Trigger	1				
23	0C08112A	Flip-Flop Spring	1				
24	CA08026A	Pressure Roller Drive Arm Ass'y	1				
25	CA08099A	Auto Shut-off Ass'y	1				
26	CA08098A	Counter Ass'y	1				
27	CA08105A	Pitch Control Holder Ass'y	1				
28	0C08224A	Counter Belt	1				
29	0C08119A	Record Protector	1				
30	0C08194C	Damper Lock Arm	1				
31	0C08153A	Damper Lock Arm Spring Tube	1				
32	0C08125A	Damper Lock Arm Spring	1				
33	CA08030A	Pneumatic Damper Ass'y	1				
34	CA08023A	Supply Capstan Flange Ass'y	1				
35	CA08024A	Take-up Capstan Flange Ass'y	1				
36	0C08186A	Cam Drive Gear	1				
37	0C08029H	Control Cam	1				
38	0C08152A	Counter-Load Arm Spring	1				
39	0C08117A	Counter-Load Arm Spring Tube	1				
40	CA08028A	Counter-Load Arm Ass'y	1				
41	0C08123B	Record Switch Linkage Wire	1				
42	0C08037E	Record Arm B	1				
43	0C08116A	Record Arm Spring	1				
44	CA08072A	Main Chassis Ass'y	1				
45	0C08250A	Supply Pressure Roller Spring B	1				
46	CA08196A	Back Tension Ass'y	1				
47	0C08254A	Back Tension Arm Collar	1				
L01	0E00837A	Stopper Ring 3mm	12				
L02	0E00832A	BT Screw M3x14 Philips Pan Head	2				
L03	0E00834A	BT Screw M3x30 Philips Pan Head	2				
L04	0E00831A	BT Screw M3x10 Philips Pan Head	3				
L05	0E00254A	Washer 3.1mm (Plastics)	2				
L06	0E00222A	E-Ring 2mm	2				
L07	0E00839A	Stopper Ring 2.5mm	1				
L08	0E00876A	Screw M2.6x8 Philips Pan Head	11				
L09	0C08060B	Height Adjustment Nut	2				
L10	0E00142A	Washer 2.6mm	2				

8.9. Main Mechanism Chassis Ass'y (C03)

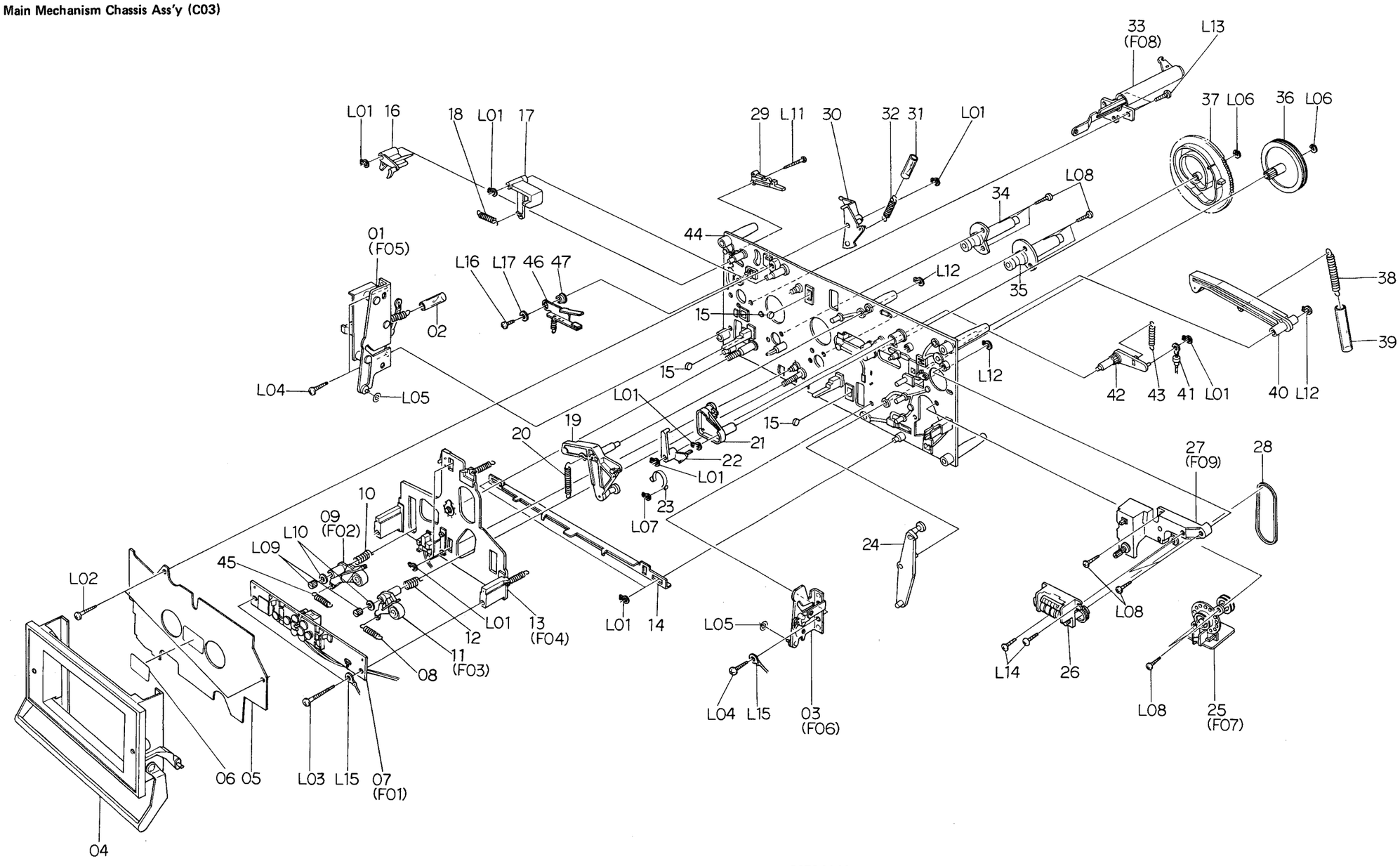


Fig. 8.9.1 Serial No.: A30704141 –

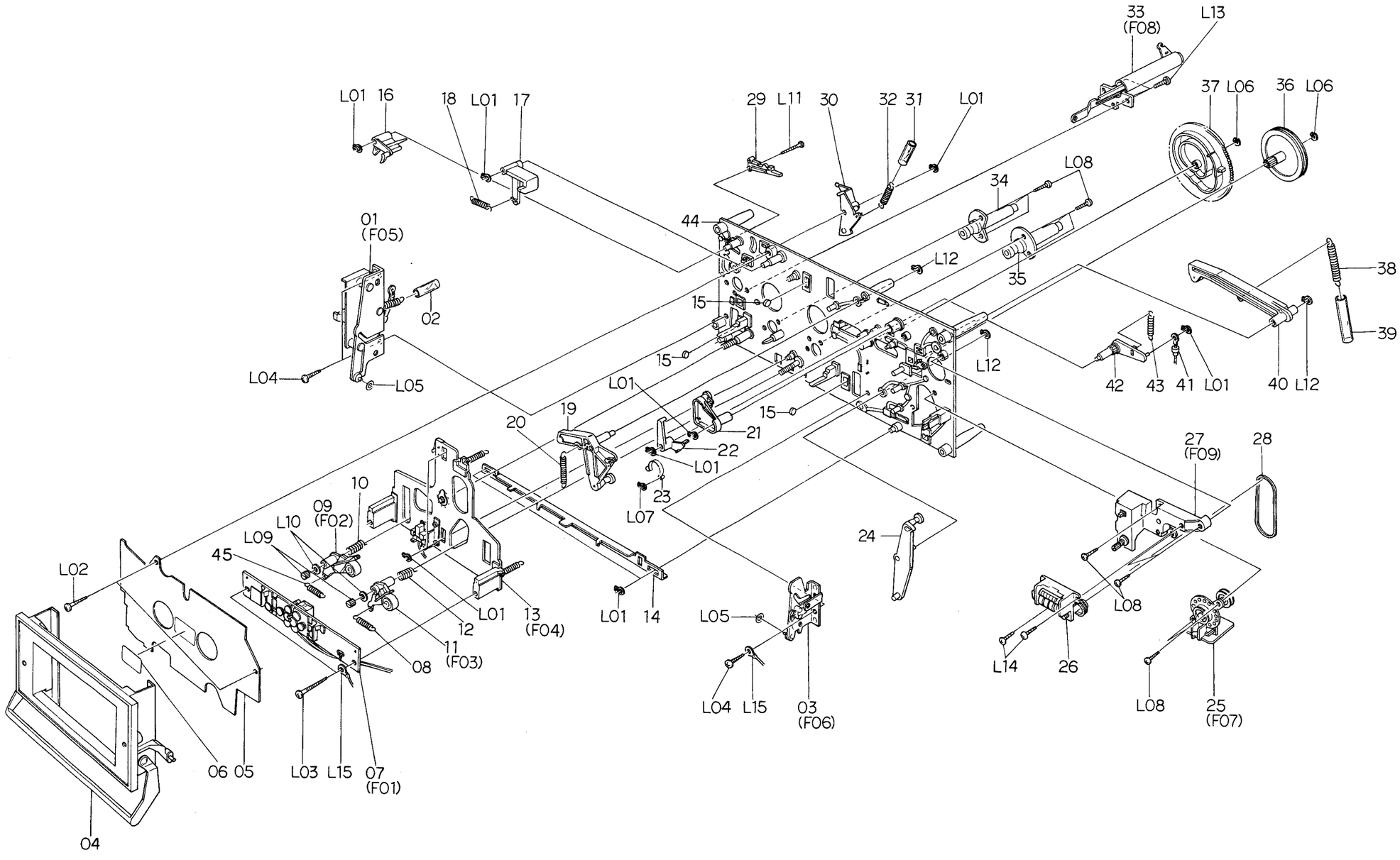


Fig. 8.9.2 Serial Nos.: A30703405 – A30704140

Schematic Ref. No.	Part No.	Description	Q'ty
C03	**CA08179A**	**Main Mechanism Chassis Ass'y** Serial Nos.: A30703405 – A30704140	1
01	CA08125A	Cassette Case Holder L Ass'y	1
02	0C08151A	Lid Arm Spring Tube	1
03	CA08022A	Cassette Case Holder R Ass'y	1
04	CA08163A	Cassette Case Ass'y	1
05	0C08019I	Cover Plate	1
06	0M03977A	Cassette Viewer Label	1
07	CA08147A	Head Mount Base Ass'y	1
08	0C08121A	Supply Pressure Roller Spring	1
09	CA08053B	Supply Pressure Roller Ass'y	1
10	0C08122B	Supply Pressure Roller Thrust Spring	1
11	CA08079B	Take-up Pressure Roller Ass'y	1
12	0C08183B	Take-up Pressure Roller Thrust Spring	1
13	CA08104A	Head Base Ass'y D	1
14	0C08182A	Pressure Roller Drive Bar B	1
15	0C08086B	Head Base Roller	3
16	0C08050B	Record Sensor	1
17	0C08051E	Cassette Hold Arm	1
18	0C08120A	Cassette Hold Arm Spring	1
19	CA08027A	Head Base Drive Arm Ass'y	1
20	0C08143C	Head Base Drive Arm Spring	1
21	CA08025A	Record Arm Ass'y	1
22	0C08038A	Record Trigger	1
23	0C08112A	Flip-Flop Spring	1
24	CA08026A	Pressure Roller Drive Arm Ass'y	1
25	CA08099A	Auto Shut-off Ass'y	1
26	CA08098A	Counter Ass'y	1
27	CA08105A	Pitch Control Holder Ass'y	1
28	0C08224A	Counter Belt	1
29	0C08119A	Record Protector	1
30	0C08194C	Damper Lock Arm	1
31	0C08153A	Damper Lock Arm Spring Tube	1
32	0C08125A	Damper Lock Arm Spring	1
33	CA08030A	Pneumatic Damper Ass'y	1
34	CA08023A	Supply Capstan Flange Ass'y	1
35	CA08024A	Take-up Capstan Flange Ass'y	1
36	0C08186A	Cam Drive Gear	1
37	0C08029H	Control Cam	1
38	0C08152A	Counter-Load Arm Spring	1
39	0C08117A	Counter-Load Arm Spring Tube	1
40	CA08028A	Counter-Load Arm Ass'y	1
41	0C08123B	Record Switch Linkage Wire	1
42	0C08037E	Record Arm B	1
43	0C08116A	Record Arm Spring	1
44	CA08072A	Main Chassis Ass'y	1
45	0C08250A	Supply Pressure Roller Spring B	1
L01	0E00837A	Stopper Ring 3mm	12
L02	0E00832A	BT Screw M3x14 Philips Pan Head	2
L03	0E00834A	BT Screw M3x30 Philips Pan Head	2
L04	0E00831A	BT Screw M3x10 Philips Pan Head	3
L05	0E00254A	Washer 3.1mm (Plastics)	2
L06	0E00222A	E-Ring 2mm	2
L07	0E00839A	Stopper Ring 2.5mm	1
L08	0E00876A	Screw M2.6x8 Philips Pan Head	11
L09	0C08060B	Height Adjustment Nut	2
L10	0E00142A	Washer 2.6mm	2
L11	0E00879A	BT Screw M2x15 Philips Pan Head	1
L12	0E00838A	Stopper Ring 4mm	3
L13	0E00846A	BT Screw M3x8 Philips Pan Head	3
L14	0E00865A	BT Screw M3x10 Philips Binding Head	2
L15	0E00895A	Earth Lug 3mm	2

Schematic Ref. No.	Part No.	Description	Q'ty
C03	**CA08153A**	**Main Mechanism Chassis Ass'y** Serial Nos.: A30702751 – A30703404	1
01	CA08125A	Cassette Case Holder L Ass'y	1
02	0C08151A	Lid Arm Spring Tube	1
03	CA08022A	Cassette Case Holder R Ass'y	1
04	CA08163A	Cassette Case Ass'y	1
05	0C08019I	Cover Plate	1
06	0M03977A	Cassette Viewer Label	1
07	CA08147A	Head Mount Base Ass'y	1
08	0C08121A	Supply Pressure Roller Spring	2
09	CA08053B	Supply Pressure Roller Ass'y	1
10	0C08122B	Supply Pressure Roller Thrust Spring	1
11	CA08079B	Take-up Pressure Roller Ass'y	1
12	0C08183B	Take-up Pressure Roller Thrust Spring	1
13	CA08104A	Head Base Ass'y D	1
14	0C08182A	Pressure Roller Drive Bar B	1
15	0C08086B	Head Base Roller	3
16	0C08050B	Record Sensor	1
17	0C08051E	Cassette Hold Arm	1
18	0C08120A	Cassette Hold Arm Spring	1
19	CA08027A	Head Base Drive Arm Ass'y	1
20	0C08143C	Head Base Drive Arm Spring	1
21	CA08025A	Record Arm Ass'y	1
22	0C08038A	Record Trigger	1
23	0C08112A	Flip-Flop Spring	1
24	CA08026A	Pressure Roller Drive Arm Ass'y	1
25	CA08099A	Auto Shut-off Ass'y	1
26	CA08098A	Counter Ass'y	1
27	CA08105A	Pitch Control Holder Ass'y	1
28	0C08224A	Counter Belt	1
29	0C08119A	Record Protector	1
30	0C08194C	Damper Lock Arm	1
31	0C08153A	Damper Lock Arm Spring Tube	1
32	0C08125A-	Damper Lock Arm Spring	1
33	CA08030A	Pneumatic Damper Ass'y	1
34	CA08023A	Supply Capstan Flange Ass'y	1
35	CA08024A	Take-up Capstan Flange Ass'y	1
36	0C08186A	Cam Drive Gear	1
37	0C08029H	Control Cam	1
38	0C08152A	Counter-Load Arm Spring	1
39	0C08117A	Counter-Load Arm Spring Tube	1
40	CA08028A	Counter-Load Arm Ass'y	1
41	0C08123B	Record Switch Linkage Wire	1
42	0C08037E	Record Arm B	1
43	0C08116A	Record Arm Spring	1
44	CA08072A	Main Chassis Ass'y	1
L01	0E00837A	Stopper Ring 3mm	12
L02	0E00832A	BT Screw M3x14 Philips Pan Head	2
L03	0E00834A	BT Screw M3x30 Philips Pan Head	2
L04	0E00831A	BT Screw M3x10 Philips Pan Head	3
L05	0E00254A	Washer 3.1mm (Plastics)	2
L06	0E00222A	E-Ring 2mm	2
L07	0E00839A	Stopper Ring 2.5mm	1
L08	0E00876A	Screw M2.6x8 Philips Pan Head	11
L09	0C08060B	Height Adjustment Nut	2
L10	0E00142A	Washer 2.6mm	2
L11	0E00879A	BT Screw M2x15 Philips Pan Head	1
L12	0E00838A	Stopper Ring 4mm	3
L13	0E00846A	BT Screw M3x8 Philips Pan Head	3
L14	0E00865A	BT Screw M3x10 Philips Binding Head	2
L15	0E00895A	Earth Lug 3mm	2

Schematic Ref. No.	Part No.	Description	Q'ty
C03	**CA08153A**	**Main Mechanism Chassis Ass'y** Serial Nos.: A30701001 – A30702750	1
01	CA08125A	Cassette Case Holder L Ass'y	1
02	0C08151A	Lid Arm Spring Tube	1
03	CA08022A	Cassette Case Holder R Ass'y	1
04	CA08163A	Cassette Case Ass'y	1
05	0C08019I	Cover Plate	1
06	0M03977A	Cassette Viewer Label	1
07	CA08147A	Head Mount Base Ass'y	1
08	0C08121A	Supply Pressure Roller Spring	2
09	CA08053B	Supply Pressure Roller Ass'y	1
10	0C08122B	Supply Pressure Roller Thrust Spring	1
11	CA08079A	Take-up Pressure Roller Ass'y	1
12	0C08183B	Take-up Pressure Roller Thrust Spring	1
13	CA08104A	Head Base Ass'y D	1
14	0C08182A	Pressure Roller Drive Bar B	1
15	0C08086B	Head Base Roller	3
16	0C08050B	Record Sensor	1
17	0C08051E	Cassette Hold Arm	1
18	0C08120A	Cassette Hold Arm Spring	1
19	CA08027A	Head Base Drive Arm Ass'y	1
20	0C08143C	Head Base Drive Arm Spring	1
21	CA08025A	Record Arm Ass'y	1
22	0C08038A	Record Trigger	1
23	0C08112A	Flip-Flop Spring	1
24	CA08026A	Pressure Roller Drive Arm Ass'y	1
25	CA08099A	Auto Shut-off Ass'y	1
26	CA08098A	Counter Ass'y	1
27	CA08105A	Pitch Control Holder Ass'y	1
28	0C08224A	Counter Belt	1
29	0C08119A	Record Protector	1
30	0C08194C	Damper Lock Arm	1
31	QC08153A	Damper Lock Arm Spring Tube	1
32	0C08125A	Damper Lock Arm Spring	1
33	CA08030A	Pneumatic Damper Ass'y	1
34	CA08023A	Supply Capstan Flange Ass'y	1
35	CA08024A	Take-up Capstan Flange Ass'y	1
36	0C08186A	Cam Drive Gear	1
37	0C08029H	Control Cam	1
38	0C08152A	Counter-Load Arm Spring	1
39	0C08117A	Counter-Load Arm Spring Tube	1
40	CA08028A	Counter-Load Arm Ass'y	1
41	0C08123B	Record Switch Linkage Wire	1
42	0C08037E	Record Arm B	1
43	0C08116A	Record Arm Spring	1
44	CA08072A	Main Chassis Ass'y	1
L01	0E00837A	Stopper Ring 3mm	12
L02	0E00832A	BT Screw M3x14 Philips Pan Head	2
L03	0E00834A	BT Screw M3x30 Philips Pan Head	2
L04	0E00831A	BT Screw M3x10 Philips Pan Head	3
L05	0E00254A	Washer 3.1mm (Plastics)	2
L06	0E00222A	E-Ring 2mm	2
L07	0E00839A	Stopper Ring 2.5mm	1
L08	0E00876A	Screw M2.6x8 Philips Pan Head	11
L09	0C08060B	Height Adjustment Nut	2

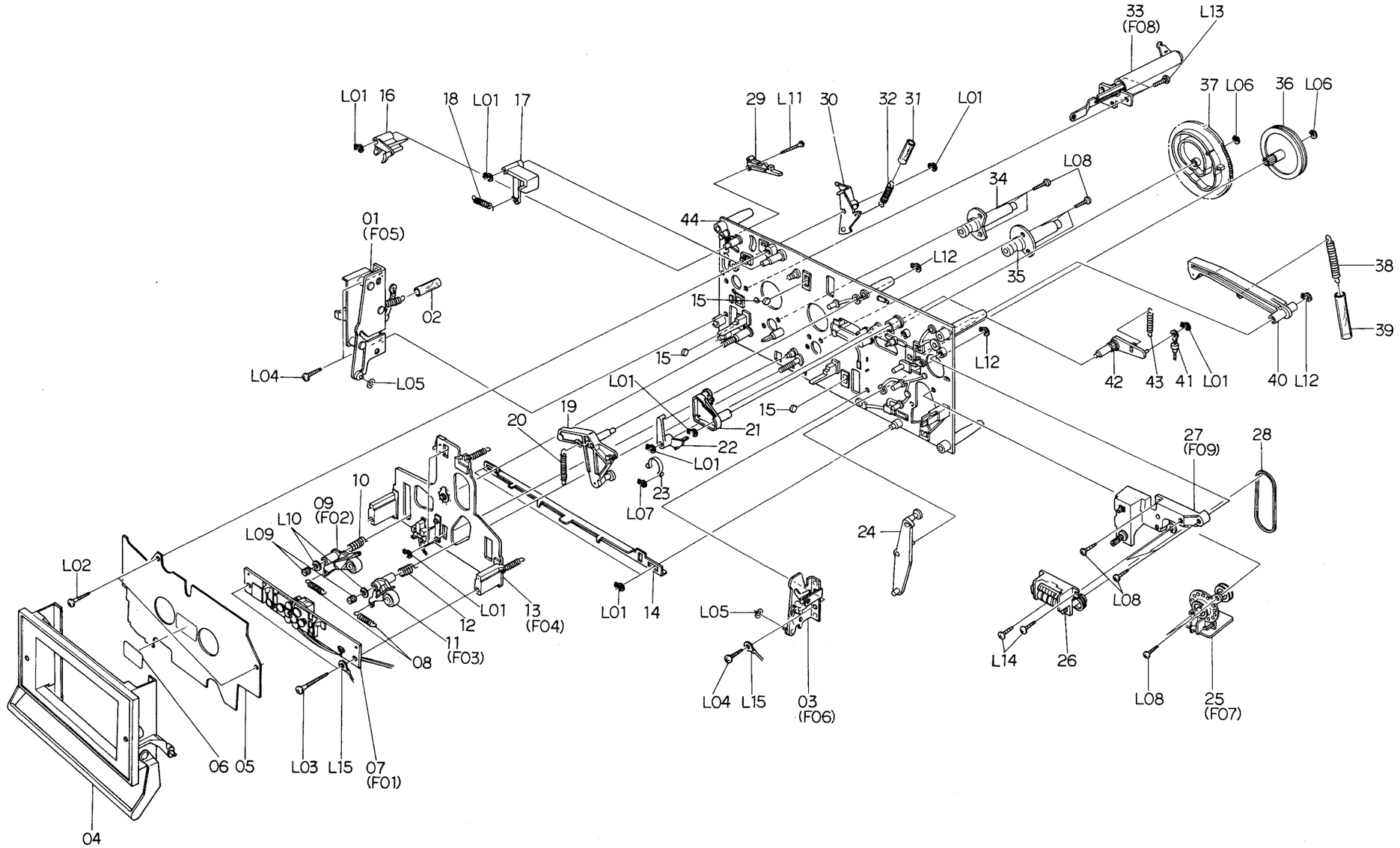


Fig. 8.9.3 Serial Nos.: A30701001 – A30703404

Schematic Ref. No.	Part No.	Description	Q'ty
L10	0E00142A	Washer 2.6mm	2
L11	0E00879A	BT Screw M2x15 Philips Pan Head	1
L12	0E00838A	Stopper Ring 4mm	3
L13	0E00846A	BT Screw M3x8 Philips Pan Head	3
L14	0E00865A	BT Screw M3x10 Philips Binding Head	2
L15	0E00895A	Earth Lug 3mm	2

8.10. Record Calibration Ass'y (D01)

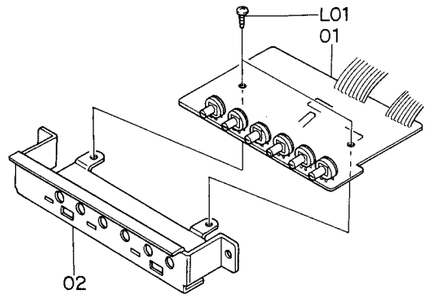


Fig. 8.10

8.11. Volume Holder Ass'y (D02)

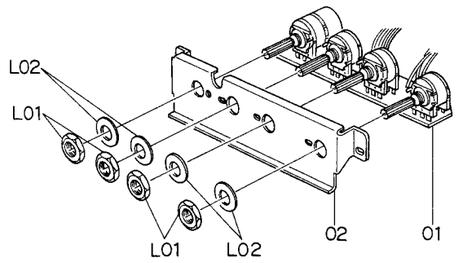


Fig. 8.11

8.12. Headphone Jack Ass'y (D03)

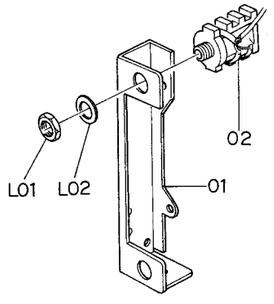


Fig. 8.12

8.13. Reflector Ass'y (D04)

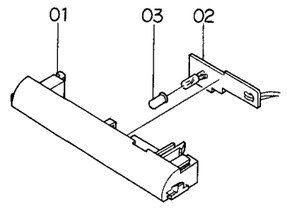


Fig. 8.13

8.14. Counter Lamp Ass'y (D05)

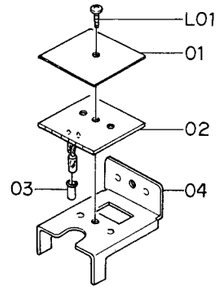


Fig. 8.14

8.15. Power Switch Holder Ass'y (D06)

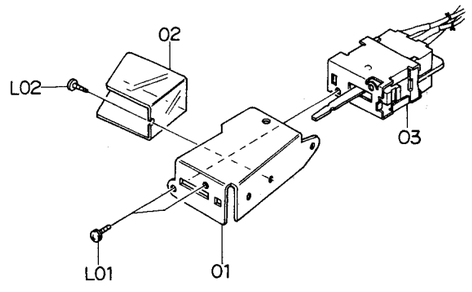
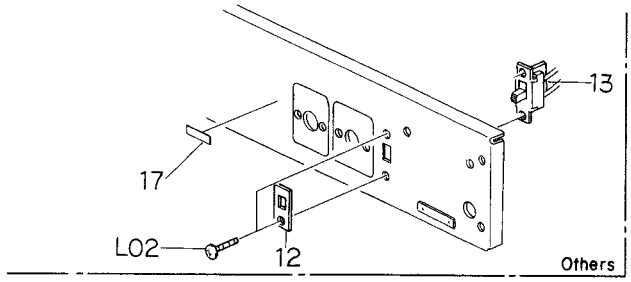


Fig. 8.15

Schematic Ref. No.	Part No.	Description	Q'ty
D01	**JA03661A**	**Record Calibration Ass'y**	**1**
		Serial No.:	
		A30701001 –	
01	BA04188A	Record Cal. P.C.B. Ass'y	1
02	0J04102B	Cal. P.C.B. Holder	1
L01	0E00856A	BT Screw M3x5 Philips Binding Head	2
D02	**JA03658A**	**Volume Holder Ass'y**	**1**
		Serial No.:	
		A30701001 –	
01	BA04175A	Volume P.C.B. Ass'y	1
02	0J04100A	Volume Holder	1
L01	–	Volume Nut	(4)
L02	–	Volume Washer	(4)
D03	**JA03659A**	**Headphone Jack Ass'y**	**1**
		Serial No.:	
		A30701001 –	
01	0J04101A	Headphone Jack Holder	1
02	0B08511A	Headphone Jack	1
L01	–	Headphone Jack Nut	(1)
L02	–	Headphone Jack Washer	(1)
D04	**JA03600A**	**Reflector Ass'y**	**1**
		Serial No.:	
		A30701001 –	
01	0H03754C	Reflector	1
02	BA04063A	Lamp P.C.B. C Ass'y	1
03	0J04107A	Filter Cap	1
D05	**JA03602A**	**Counter Lamp Ass'y**	**1**
		Serial No.:	
		A30701001 –	
01	0J04083A	Insulator	1
02	BA04062A	Lamp P.C.B. B Ass'y	1
03	0J04107A	Filter Cap	1
04	0J04041A	Counter Lamp P.C.B. Holder	1
L01	0E00859A	BT Screw M2.6x6 Philips Binding Head	1
D06	**JA03592A**	**Power Switch Holder Ass'y (U.S.A. & Canada)**	**1**
	JA03595A	**Power Switch Holder Ass'y (Japan)**	**1**
	JA03594A	**Power Switch Holder Ass'y (220V Class 2, UK, Australia & Others)**	**1**
		Serial No.:	
		A30701001 –	
01	0J04038A	Power Switch Holder	1
02	0J04056A	Power Switch Insulator	1
03	0B07280A	Power Switch (U.S.A. & Canada)	1
	0B07291A	Power Switch (Japan)	1
	0B07292A	Power Switch (220V Class 2, UK, Australia & Others)	1
L01	0E00622A	Screw M3x5 Philips Pan Head (2A)	2
L02	0E00873A	BT Screw M2.6x5 Philips Binding Head	1

Schematic Ref. No.	Part No.	Description	Q'ty
D07	**HA03945A**	**Rear Panel Ass'y (U.S.A. & Canada)**	**1**
	HA03946A	**Rear Panel Ass'y (Japan)**	**1**
	HA03950A	**Rear Panel Ass'y (220V Class 2)**	**1**
	HA03949A	**Rear Panel Ass'y (Australia)**	**1**
	HA03948A	**Rear Panel Ass'y (UK)**	**1**
	HA03947A	**Rear Panel Ass'y (Others)**	**1**
		Serial No.:	
		A30701001 –	
01	0H03817A	Rear Panel	1
02	BA04176A	Pin Jack P.C.B. Ass'y	1
03	0B08355A	4P DIN Socket	1
04	0B08584A	8P DIN Socket	1
05	BA04202A	Fuse P.C.B. Ass'y (U.S.A. & Canada)	1
	BA04203A	Fuse P.C.B. Ass'y (Japan)	1
	BA04204A	Fuse P.C.B. Ass'y (220V Class 2)	1
	BA04205A	Fuse P.C.B. Ass'y (UK & Australia)	1
	BA04206A	Fuse P.C.B. Ass'y (Others)	1
06	0C01162B	Bolt Receptacle Plate	2
07	0B06609B	Power Transformer (U.S.A. & Canada)	1
	0B06610A	Power Transformer (Japan)	1
	0B06612A	Power Transformer (220V Class 2, UK & Australia)	1
	0B06611B	Power Transformer (Others)	1
08	0J04016A	Transformer Plate	1
09	0B08037U	Cord Bushing C (U.S.A., Canada, Japan, 220V Class 2 & Others)	1
	0B08719A	Cord Bushing (Australia)	1
	0B08351A	Cord Bushing 4K-4 (UK)	1
10	0B08533A	Power Cord (U.S.A., Canada & Others)	1
	0B08219B	Power Cord (Japan)	1
	0B08093A	Power Cord (220V Class 2)	1
	0B08666A	Power Cord (Australia)	1
	0B08348A	Power Cord (UK)	1
11	0A03154B	Cord Spacer	1
12	0J03663A	Switch Cover (U.S.A., Canada, Japan, 220V Class 2, Australia & UK)	1
	0M03946A	Voltage Selector Lock Plate C (Others)	1
*13	0B07092U	Voltage Selector (Others)	1
14	0J04079A	Cushion B	3
15	0M03458B	Pass Label	1
*16	0M04075A	Fuse Caution Label (U.S.A. & Canada)	1
17	0M03794A	Voltage Label 100V (Japan)	1
	0M03796A	Voltage Label 220V (220V Class 2)	1
	0M03797A	Voltage Label 240V (UK & Australia)	1
	0M03955A	Voltage Label 120V/220V-240V (Others)	1
*–	0M03844B	Power Cord Label (UK)	1
–	0F01071A	Free-up Belt	1
–	0M04115A	Serial Number Plate	1
L01	0B08720A	Plastic Rivet	4
L02	0E00594A	Screw M3x8 Philips Binding Head (Bronze)	3
*L03	0E00507A	Nut Hex. M3	3

8.16. Rear Panel Ass'y (D07)



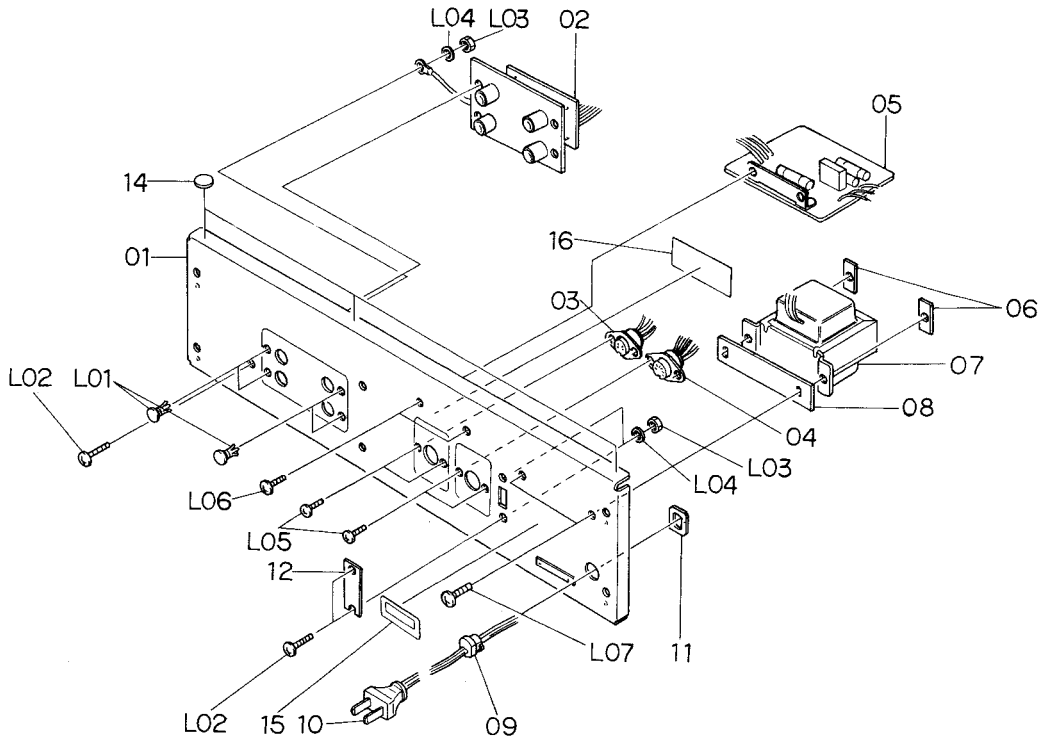


Fig. 8.16

Schematic Ref. No.	Part No.	Description	Q'ty
* L04	0E00581A	Washer 3mm (Spring)	3
L05	0E00714A	Screw M2.6x6 Philips Binding Head (Bronze)	4
L06	0E00593A	Screw M3x6 Philips Binding Head (Bronze)	2
L07	0E00756A	Screw M4x8 Philips Binding Head (Bronze)	2
—	0J03644A	Chobert Rivet	2
		*: Depends on the versions.	

Schematic Ref. No.	Part No.	Description	Q'ty
E01	**CA08117B**	**Reel Motor Ass'y** Serial No.: A30701001 –	**1**
01	0C08218A	Reel Motor	1
02	0C08063F	Reel Motor Pulley	1
E02	**CA08034A**	**Control Motor Ass'y** Serial No.: A30701001 –	**1**
01	0C08137A	Control Motor	1
02	0C08064A	Control Motor Pulley	1
03	0B09292A	Ceramic Capacitor 0.1μ 50V	1
04	0M03985A	Control Motor Label	1
05	0M03988A	Motor Seal B	1
E03	**CA08148A**	**Azimuth Alignment Motor Ass'y** Serial No.: A30701001 –	**1**
01	CA08149A	Azimuth Motor Ass'y	1
02	0C08099B	Control Motor Belt	1
03	0C08229B	Drive Pulley	1
04	0C08230B	Drive Pulley Shaft	1
05	0C08231B	Drive Nut	1
06	0C08232C	Drive Bar	1
07	0C08233G	Drive Unit Base	1
L01	0E00226A	Screw M2.6x4 Philips Pan Head	2
L02	0E00837A	Stopper Ring 3mm	1
F01	**CA08147A**	**Head Mount Base Ass'y** Serial No.: A30701001 –	**1**
01	0C08028C	Head Height Adjustment Gear	2
02	0C08027E	Head Height Adjustment Screw	4
03	0C08026D	Azimuth Alignment Screw	2
04	0C08161B	Spring Stopper	2
05	0C08187B	Head Plate Spring	2
06	0C08236A	Azimuth Alignment Wire Hold Plate	1
07	CA08083C	Head Mount Base Sub Ass'y	1
08	CA08158A	P-8L Playback Head Ass'y	1
09	0C08235A	Azimuth Alignment Plate	1
10	CA08150A	R-8L Record Head Ass'y	1
L01	0E00917A	BT Screw M2.6x5 Philips Pan Head	2
F02	**CA08053B**	**Supply Pressure Roller Ass'y** Serial No.: A30701001 –	**1**
01	0C08164F	Pressure Roller	1
02	0C08189B	Supply Tape Guide	1
03	CA08061A	Supply Pressure Roller Arm Ass'y	1
L01	0E00042A	E-Ring 1.5mm	1
L02	0C08024A	Washer 2mm	2
L03	0E00788A	BT Screw M2x8 Philips Pan Head	1

Schematic Ref. No.	Part No.	Description	Q'ty
F03	**CA08079B**	**Take-up Pressure Roller Ass'y** Serial No.: A30702751 –	**1**
01	0C08164F	Pressure Roller	1
02	0C08181C	Take-up Tape Guide	1
03	CA08024A	Take-up Pressure Roller Arm Ass'y	1
L01	0E00042A	E-Ring 1.5mm	1
L02	0C08024A	Washer 2mm	2
L03	0E00788A	BT Screw M2x8 Philips Pan Head	1
F03	**CA08079A**	**Take-up Pressure Roller Ass'y** Serial Nos.: A30701001 – A30702750	**1**
01	0C08164F	Pressure Roller	1
02	0C08181B	Take-up Tape Guide	1
03	CA08024A	Take-up Pressure Roller Arm Ass'y	1
L01	0E00042A	E-Ring 1.5mm	1
L02	0C08024A	Washer 2mm	2
L03	0E00788A	BT Screw M2x8 Philips Pan Head	1
F04	**CA08104A**	**Head Base Ass'y D** Serial No.: A30701001 –	**1**
01	GA02083A	E-8LH Erase Head	1
02	0C08158C	EH Hold Plate	1
03	0C08166A	EH Hold Plate Spring	1
04	0C08174C	Cassette Hold Spring	1
05	CA08003P	Head Base Ass'y	1
06	0C08175A	Head Base L Spring	3
07	0B08649E	2P-H Connector	1
L01	0E00889A	Screw M1.7x8 Philips Pan Head	2
L02	0E00909A	Screw M2x6 Philips Pan Head	3
L03	0E00117A	Washer 2mm	3
L04	0E00853A	BT Screw M2x3 Philips Pan Head	1
F05	**CA08125A**	**Cassette Case Holder L Ass'y** Serial No.: A30701001 –	**1**
01	CA08090F	Cassette Case Holder L Sub Ass'y	1
02	0C08073C	Lid Arm A	1
03	0C08195F	Eject Arm Holder	1
04	0C08196B	Eject Arm A	1
05	0C08197C	Eject Arm B	1
06	0C08199B	Eject Arm Joint	1
07	0C08114A	Lid Arm Spring	1
08	0C08211C	Eject Arm Spring	1
L01	0E00837A	Stopper Ring 3mm	1
L02	0E00838A	Stopper Ring 4mm	1
L03	0E00865A	BT Screw M3x10 Philips Binding Head	2
F06	**CA08022A**	**Cassette Case Holder R Ass'y** Serial No.: A30701001 –	**1**
01	0C08133A	Eject Sensor	1
02	CA08044A	Cassette Case Holder R Sub Ass'y	1
L01	0E00840A	BT Screw M2x8 Philips Pan Head	2

8.17. Reel Motor Ass'y (E01)

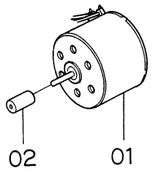


Fig. 8.17

8.18. Control Motor Ass'y (E02)

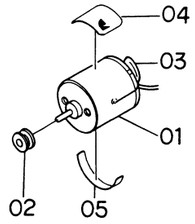


Fig. 8.18

8.19. Azimuth Alignment Motor Ass'y (E03)

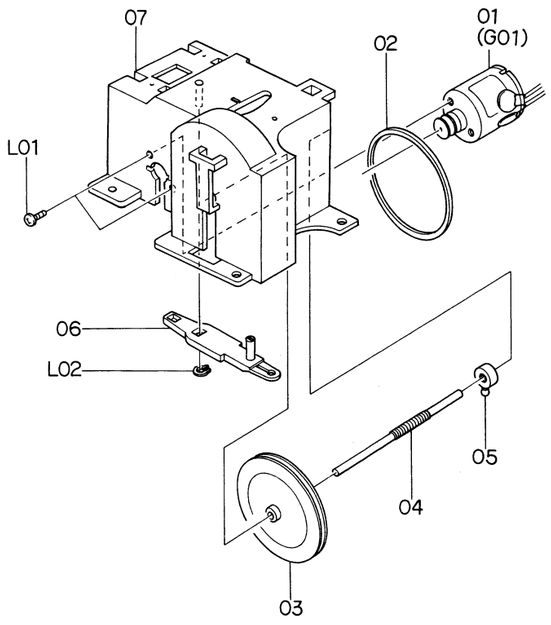


Fig. 8.19

8.20. Head Mount Base Ass'y (F01)

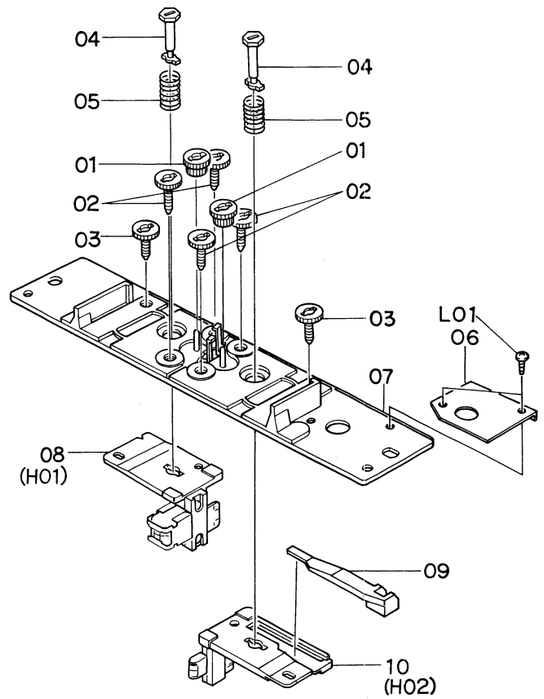


Fig. 8.20

8.21. Supply Pressure Roller Ass'y (F02)

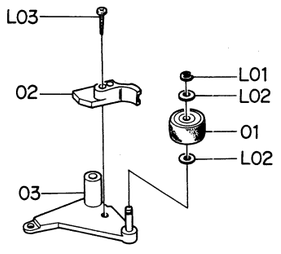


Fig. 8.21

8.22. Take-up Pressure Roller Ass'y (F03)

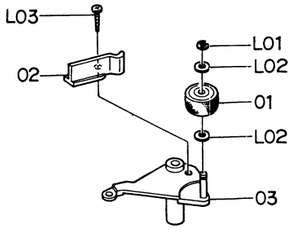


Fig. 8.22

8.23. Head Base Ass'y D (F04)

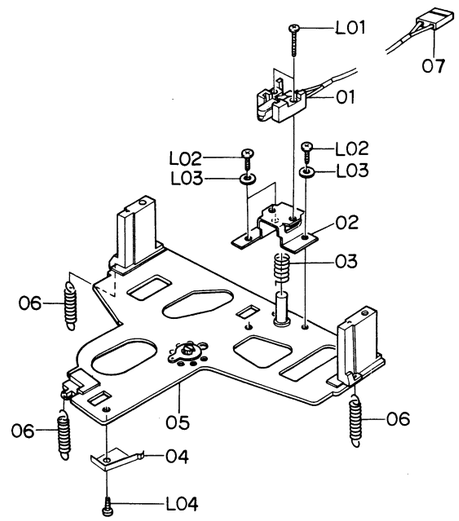


Fig. 8.23

8.24. Cassette Case Holder L Ass'y (F05)

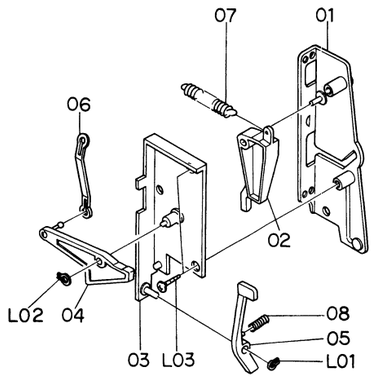


Fig. 8.24

8.25. Cassette Case Holder R Ass'y (F06)

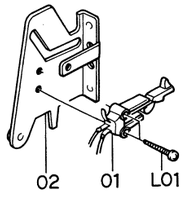


Fig. 8.25

Schematic Ref. No.	Part No.	Description	Q'ty
F07	**CA08099A**	**Auto Shut-off Ass'y** Serial No.: A30701001 –	**1**
01	0C08047A	Shut-off Pulley	2
02	0C08206B	Shut-off Pulley	1
03	0C08210A	Shut-off Pulley Shaft	1
04	0C08207B	Shut-off Pulley Holder	1
05	BA04070A	Shut-off P.C.B. Ass'y	1
F08	**CA08030A**	**Pneumatic Damper Ass'y** Serial No.: A30701001 –	**1**
01	0C08058C	Damper Piston	1
02	0C08102B	Damper Ring	1
03	0C08010C	Damper Plate	1
04	0C08059E	Sylinder	1
L01	0E00874A	Stopper Ring CS 2mm	1
F09	**CA08105A**	**Pitch Control Holder Ass'y** Serial No.: A30701001 –	**1**
01	0B07283A	Memory Switch	1
02	0B07282A	Volume Control 20kΩ (B)	1
03	0C08214D	Pitch Control Holder	1
L01	0E00125A	Screw M2x6 Philips Countersunk	2
L02	–	Volume Nut	(1)
L03	–	Volume Washer	(1)
G01	**CA08149A**	**Azimuth Motor Ass'y** Serial No.: A30701001 –	**1**
01	0C08137A	Control Motor	1
02	0C08064A	Control Motor Pulley	1
03	0B09292A	Ceramic Capacitor 0.1μ 50V Z	2
04	0M03985A	Motor Label 730	1
05	0M03988A	Motor Seal A	1
06	0B08708A	2P Connector	1
H01	**CA08158A**	**P-8L Playback Head Ass'y** Serial No.: A30701001 –	**1**
01	0C08160F	Head Plate	1
02	GA02034A	P-8L Playback Head	1
03	0C08169D	Pad Lifter 54	1
04	0B08647D	4P-H Connector	1
L01	0E00886A	Screw M1.7x6.5 Philips Pan Head	2
H02	**CA08150A**	**R-8L Record Head Ass'y** Serial No.: A30701001 –	**1**
01	0C08159G	Head Plate	1
02	GA01050A	R-8L Record Head	1
03	0B08648D	4P-H Connector	1
L01	0E00887A	Screw M1.7x4 Philips Pan Head	2

8.26. Auto Shut-off Ass'y (F07)

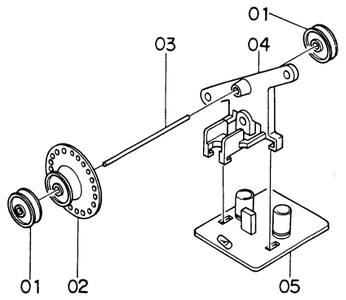


Fig. 8.26

8.27. Pneumatic Damper Ass'y (F08)

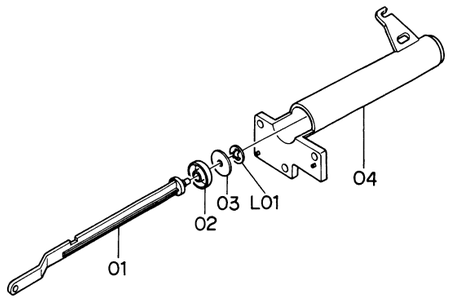


Fig. 8.27

8.28. Pitch Control Holder Ass'y (F09)

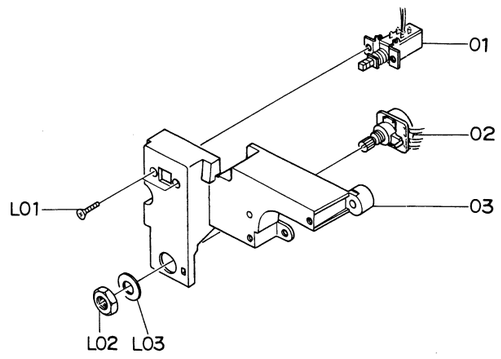


Fig. 8.28

8.29. Azimuth Motor Ass'y (G01)

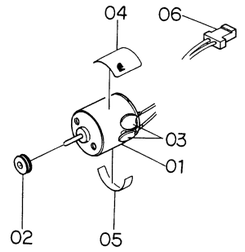


Fig. 8.29

8.30. P-8L Playback Head Ass'y (H01)

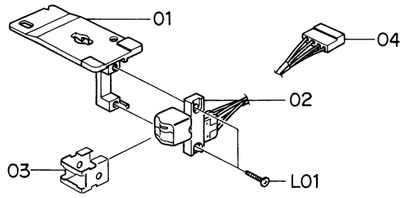
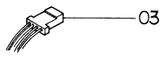


Fig. 8.30

8.31. R-8L Record Head Ass'y (H02)



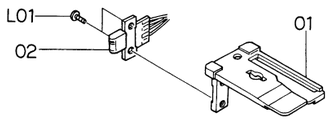


Fig. 8.31

9. OVERALL TIMING CHART

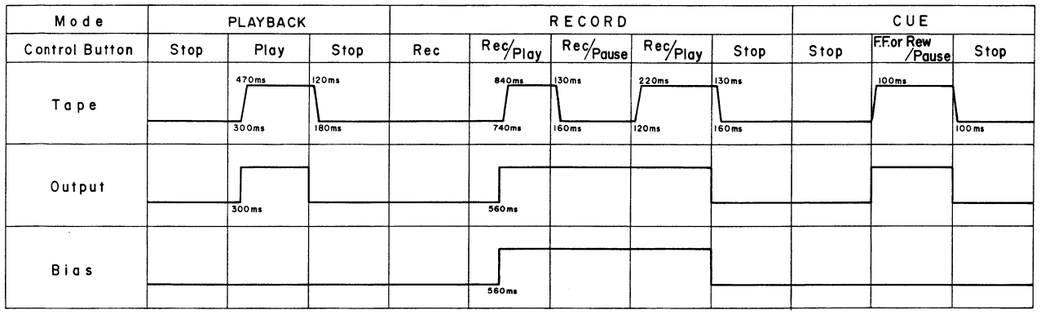


Fig. 9

10. EQ. AMP. FREQUENCY RESPONSE

10.1. Playback Frequency Response

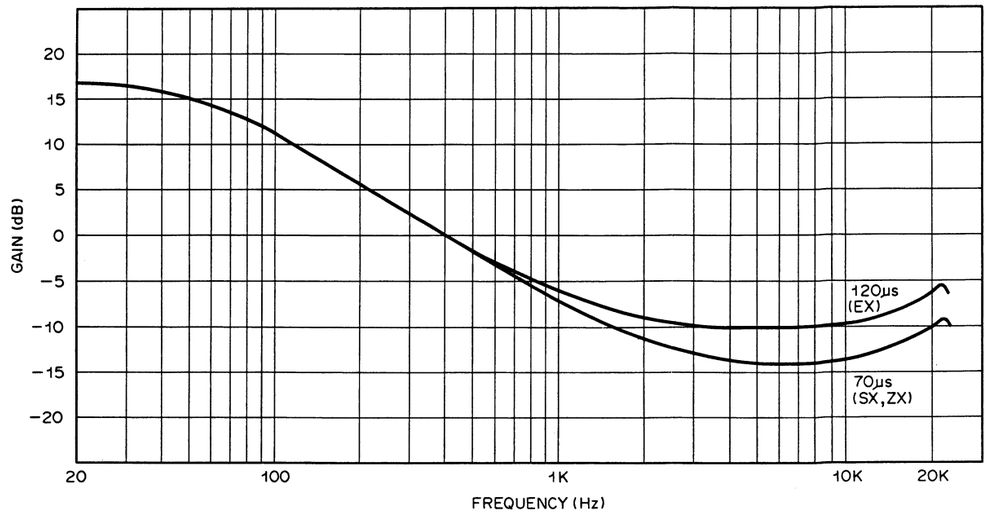


Fig. 10.1

10.2. Record Current Frequency Response

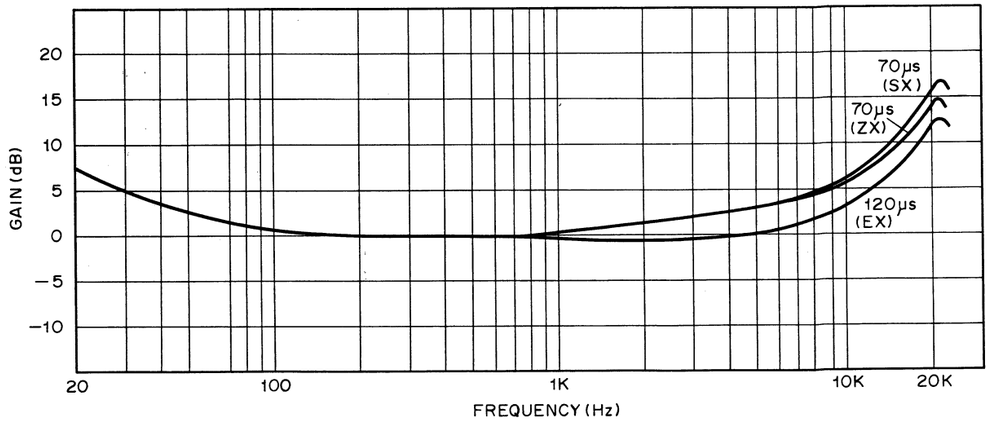


Fig. 10.2

11. BLOCK DIAGRAMS

11.1. Amplifier

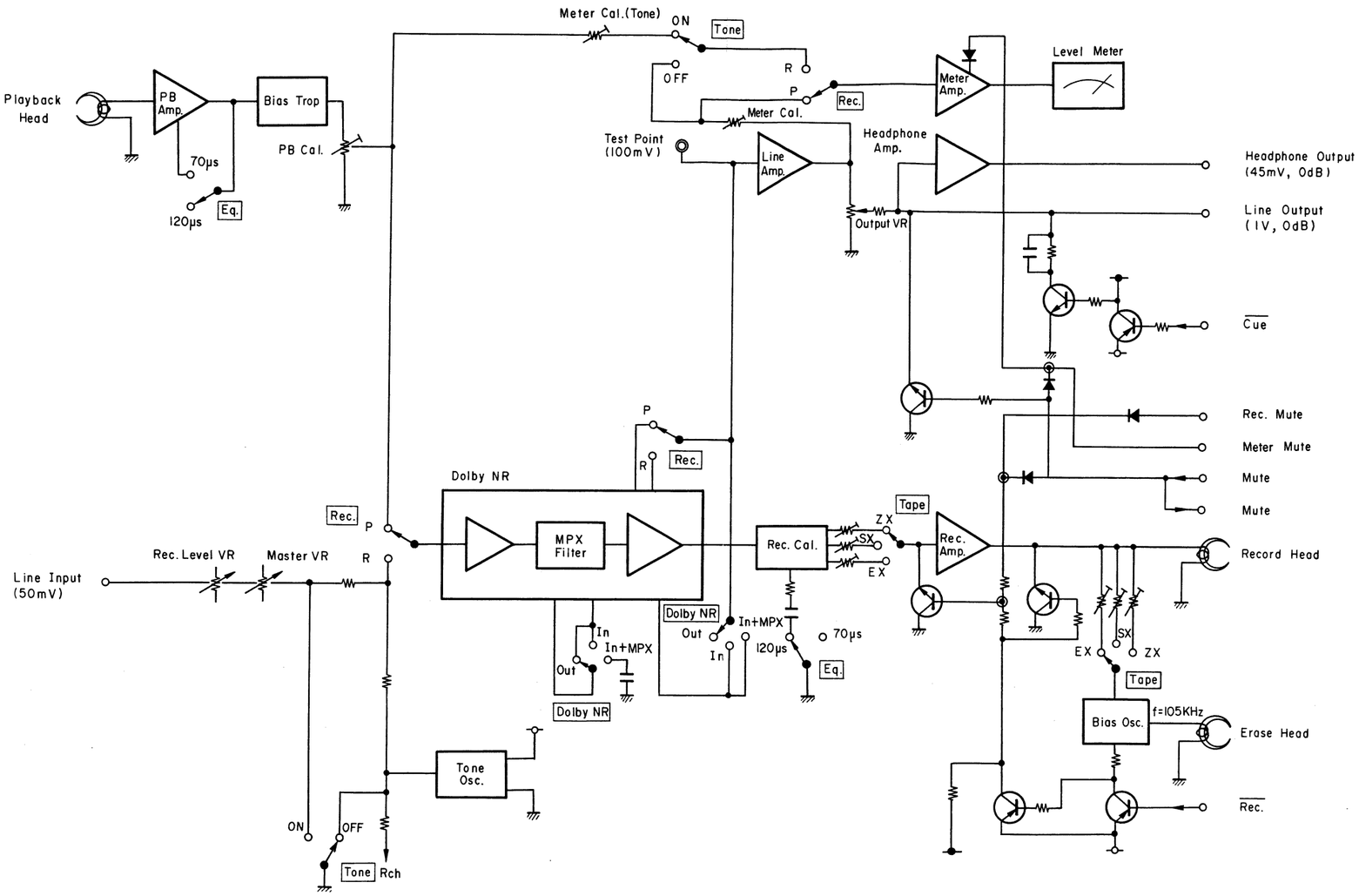


Fig. 11.1

11.2. Mechanism Control

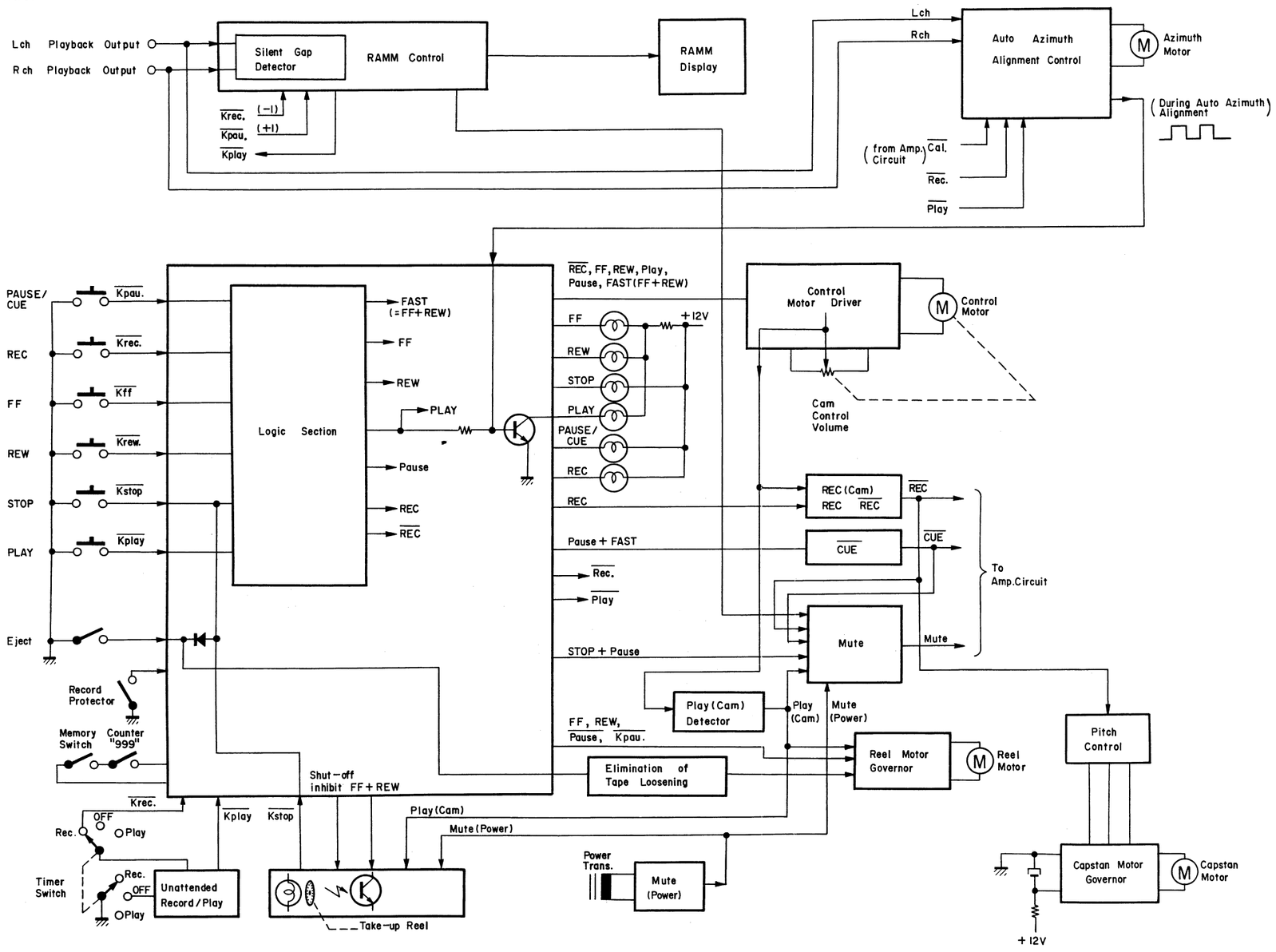


Fig. 11.2

12. WIRING DIAGRAM

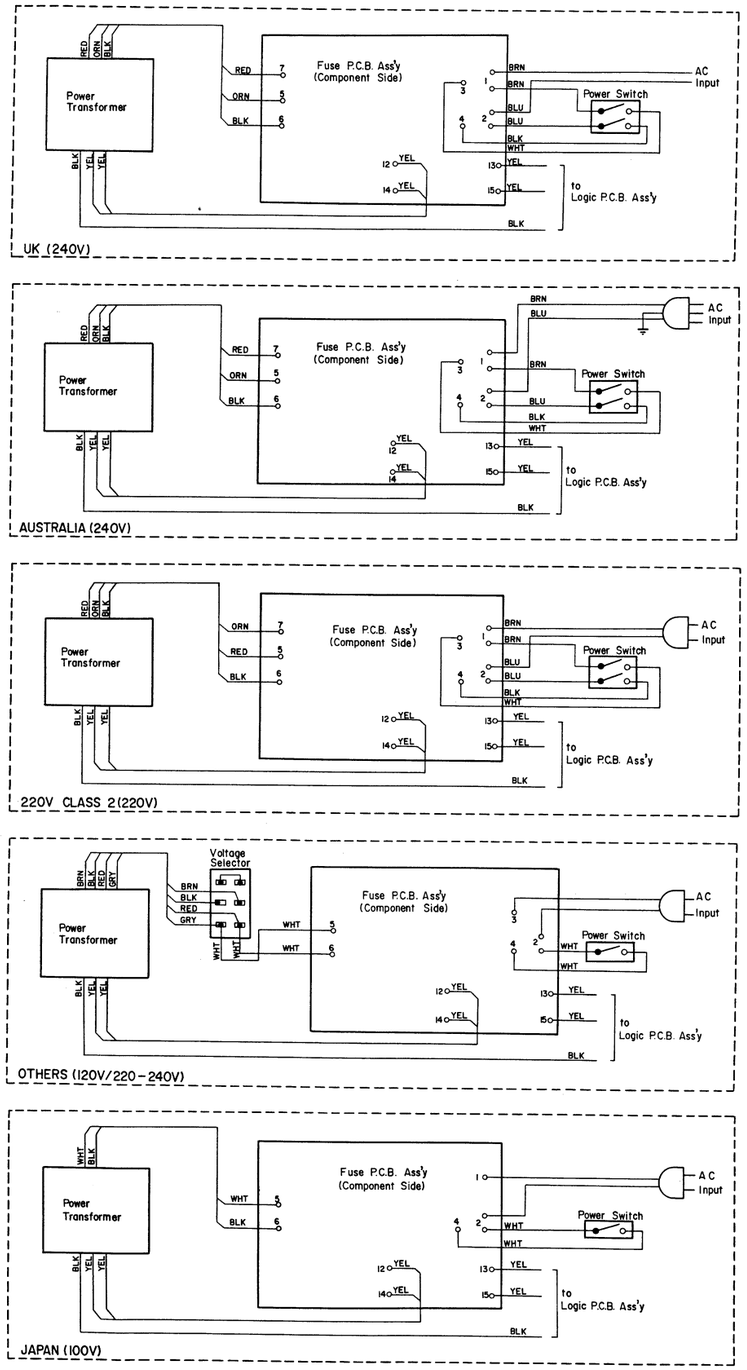


Fig. 12.1

Notes: 1. Table of wire colors
- BLK – Black
- BLU – Blue
- GRN – Green
- RED – Red
- WHT – White
- ORN – Orange
- GRY – Gray
- BRN – Brown
- YEL – Yellow
- VIO – Violet

2. Table of wire tube colors
- (B) – Black
- (R) – Red
- (W) – White
- (G) – Gray

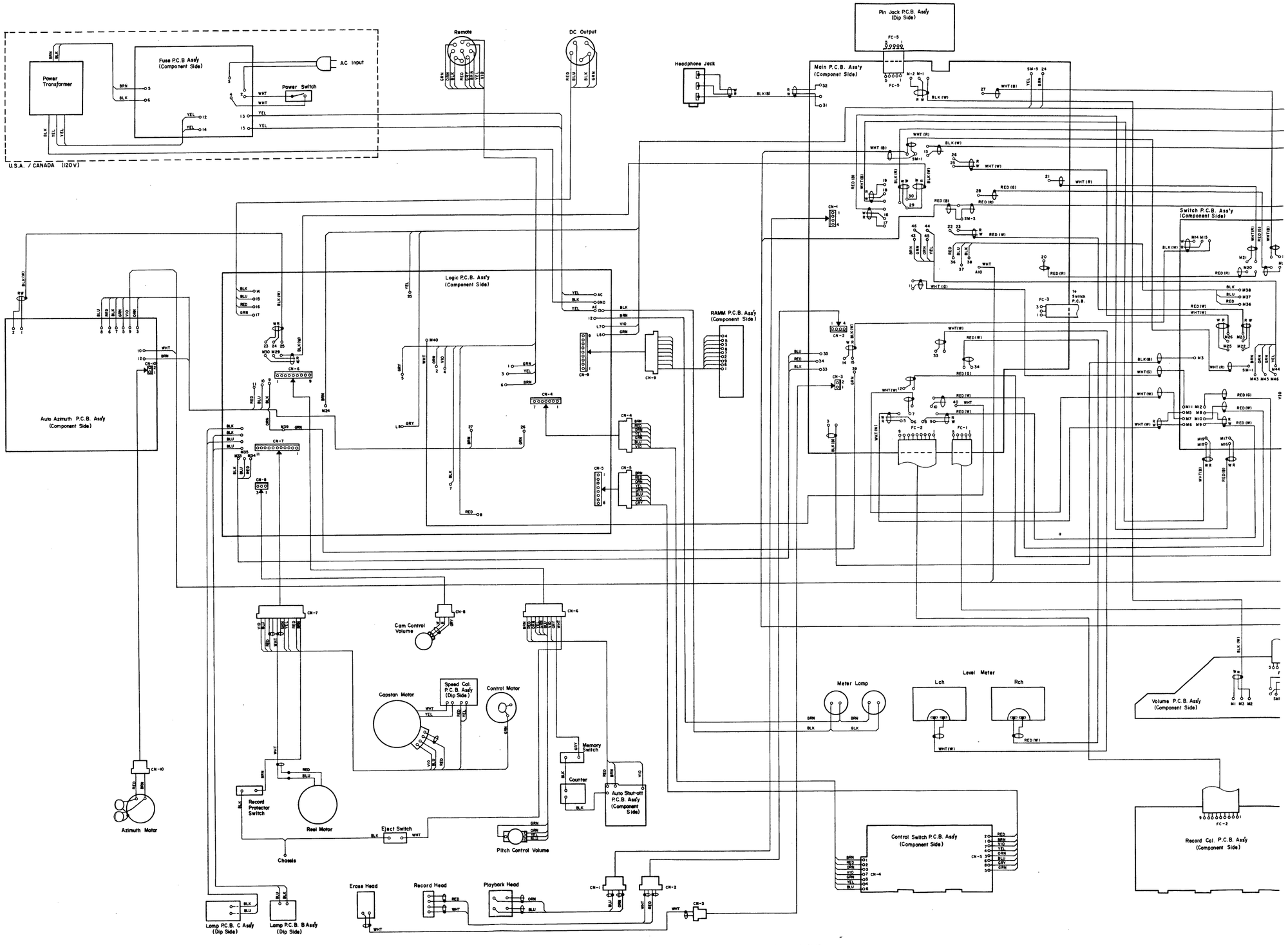


Fig. 12.2

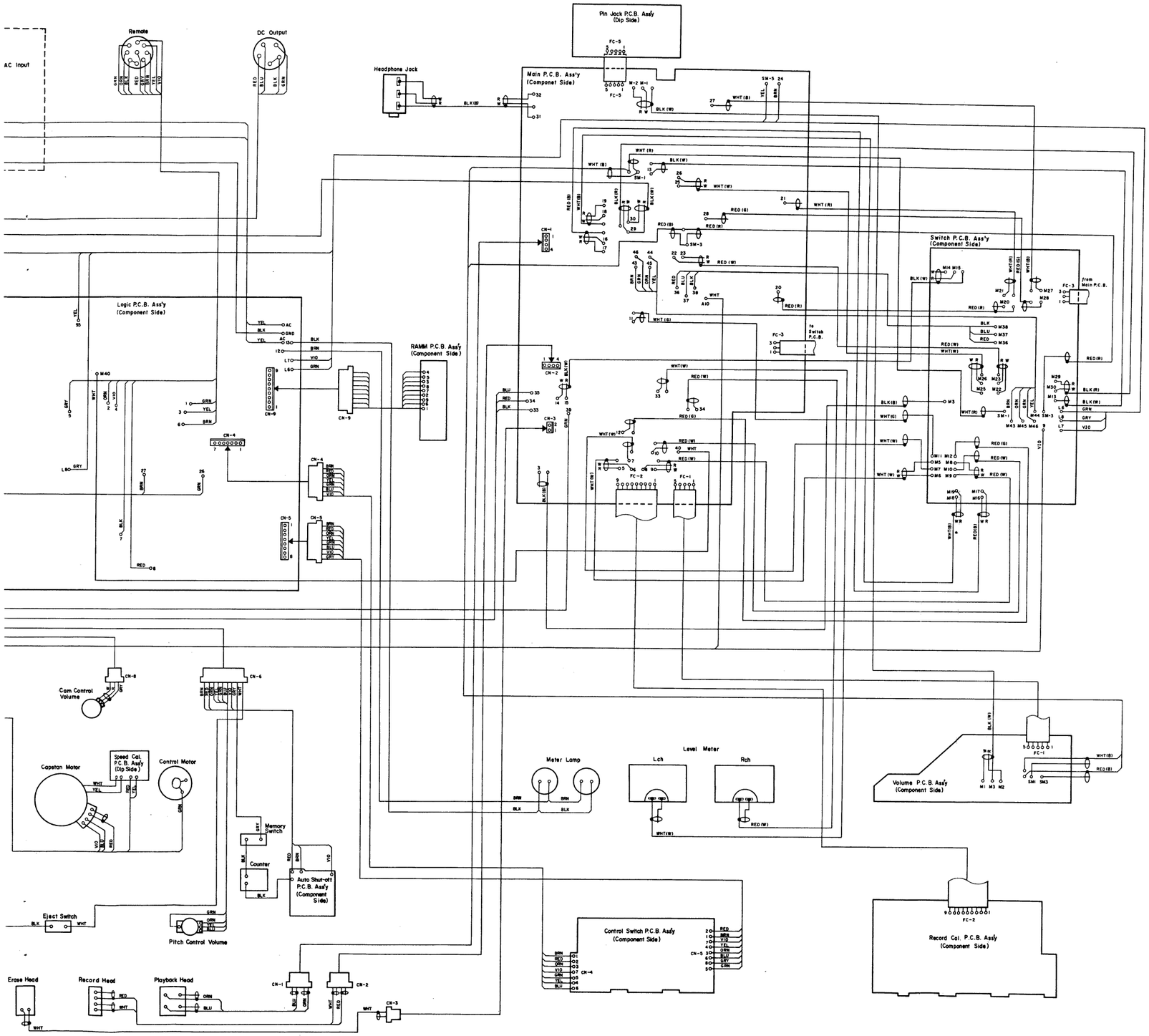

AC Input
Remote
DC Output
Pin Jack P.C.B. Assy
(Dip Side)
Headphone Jack
Main P.C.B. Assy
(Componet Side)
Logic P.C.B. Assy
(Component Side)
RAMM P.C.B. Assy
(Component Side)
Switch P.C.B. Assy
(Component Side)
from Main P.C.B.
to Switch P.C.B.
Cam Control Volume
Capstan Motor
Speed Cal. P.C.B. Assy
(Dip Side)
Control Motor
Memory Switch
Counter
Auto Shut-off P.C.B. Assy
(Component Side)
Eject Switch
Pitch Control Volume
Erase Head
Record Head
Playback Head
Meter Lamp
Level Meter
Lch
Rch
Volume P.C.B. Assy
(Component Side)
Control Switch P.C.B. Assy
(Component Side)
Record Cal. P.C.B. Assy
(Component Side)

Fig. 12.2

13. SCHEMATIC DIAGRAMS

13.1. Amplifier

Notes:
1. Diode is 1SS53, 1S953, or 1S1555 unless otherwise specified.
2. Resistor and capacitor marked with * show typical value.

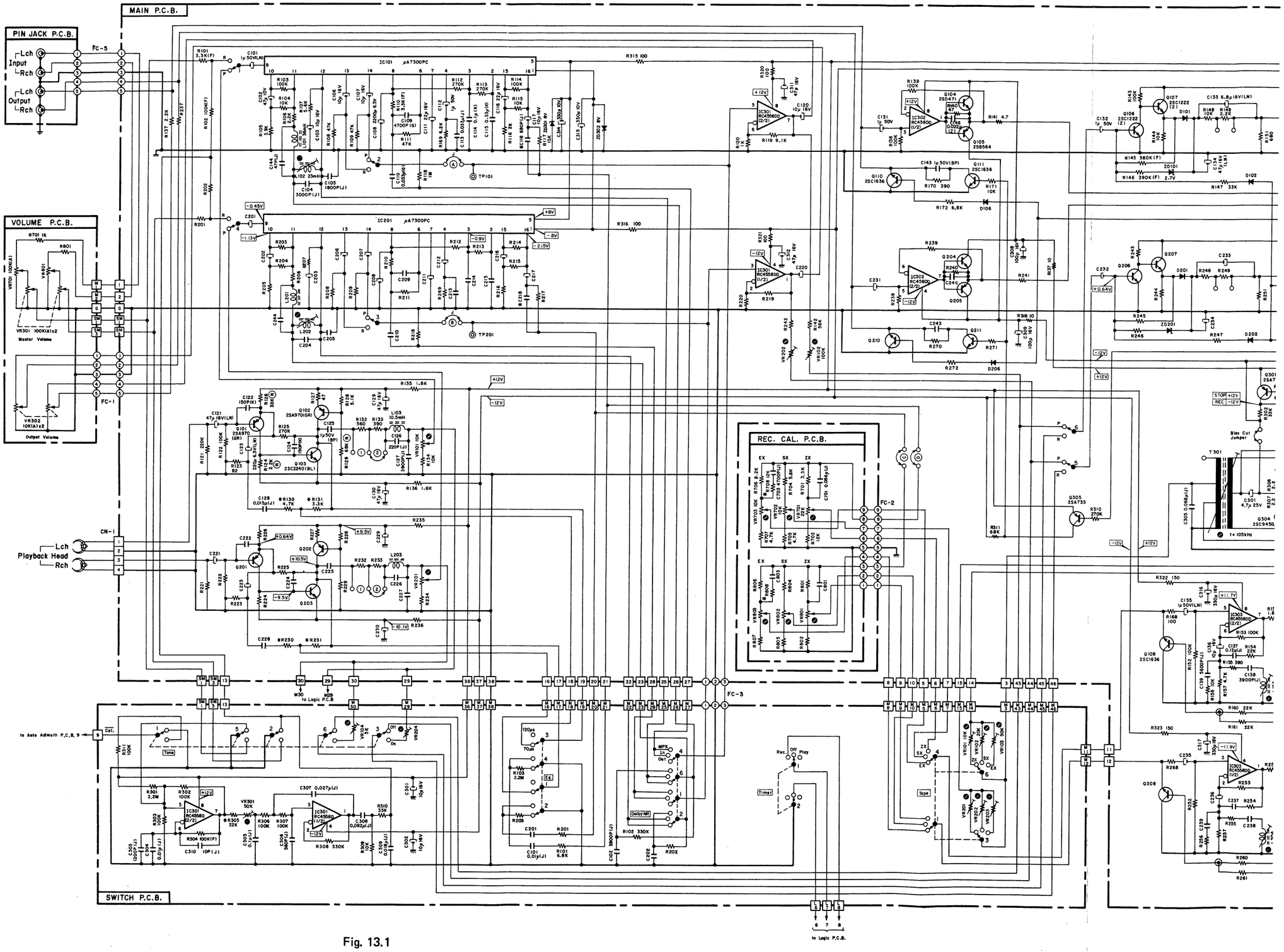
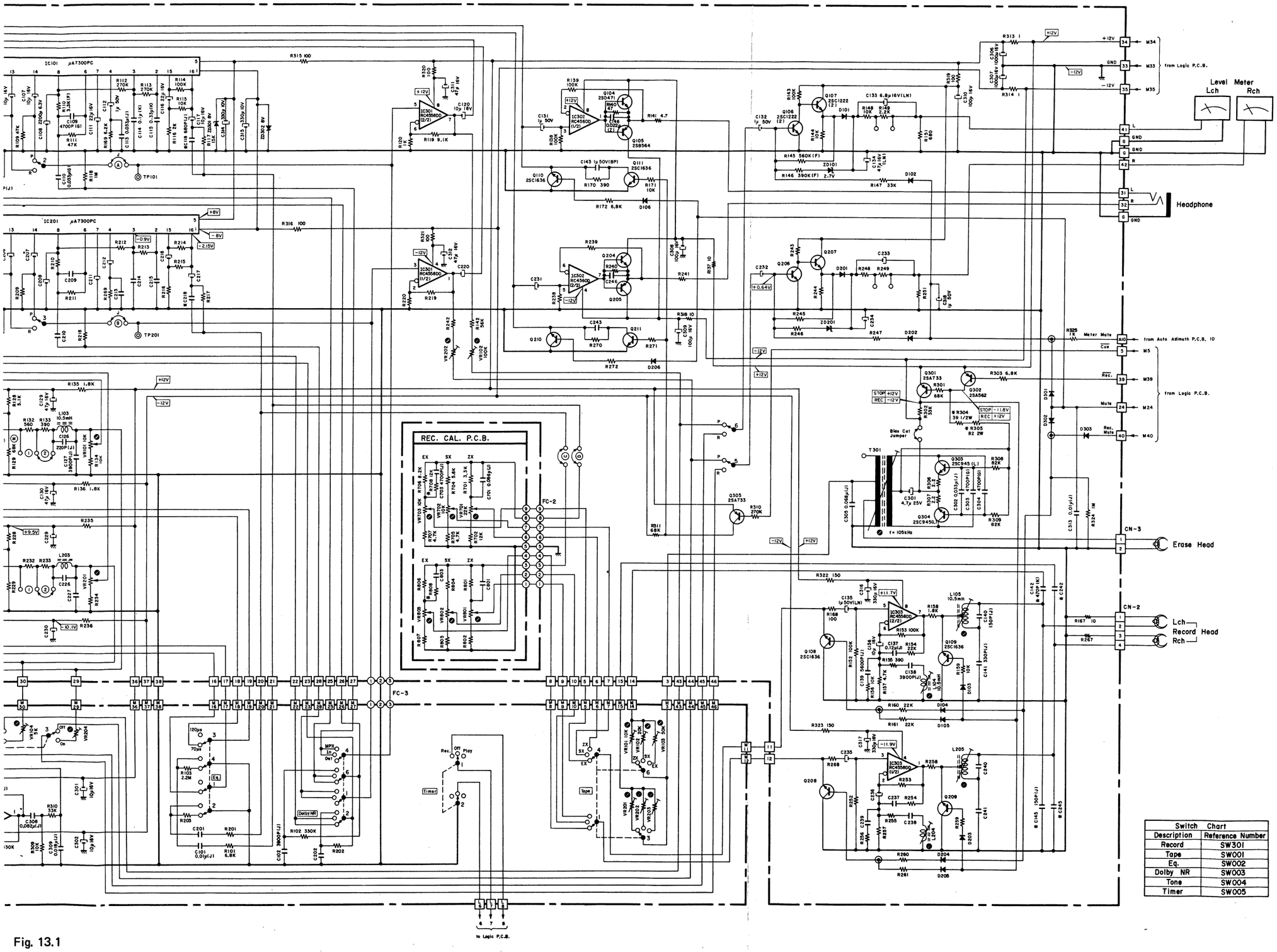


Fig. 13.1



Switch	Chart
Description	Reference Number
Record	SW301
Tape	SW001
Eq.	SW002
Dolby NR	SW003
Tone	SW004
Timer	SW005

Fig. 13.1

13.2. Mechanism Control

Notes: 1. Dioc
2. Resi

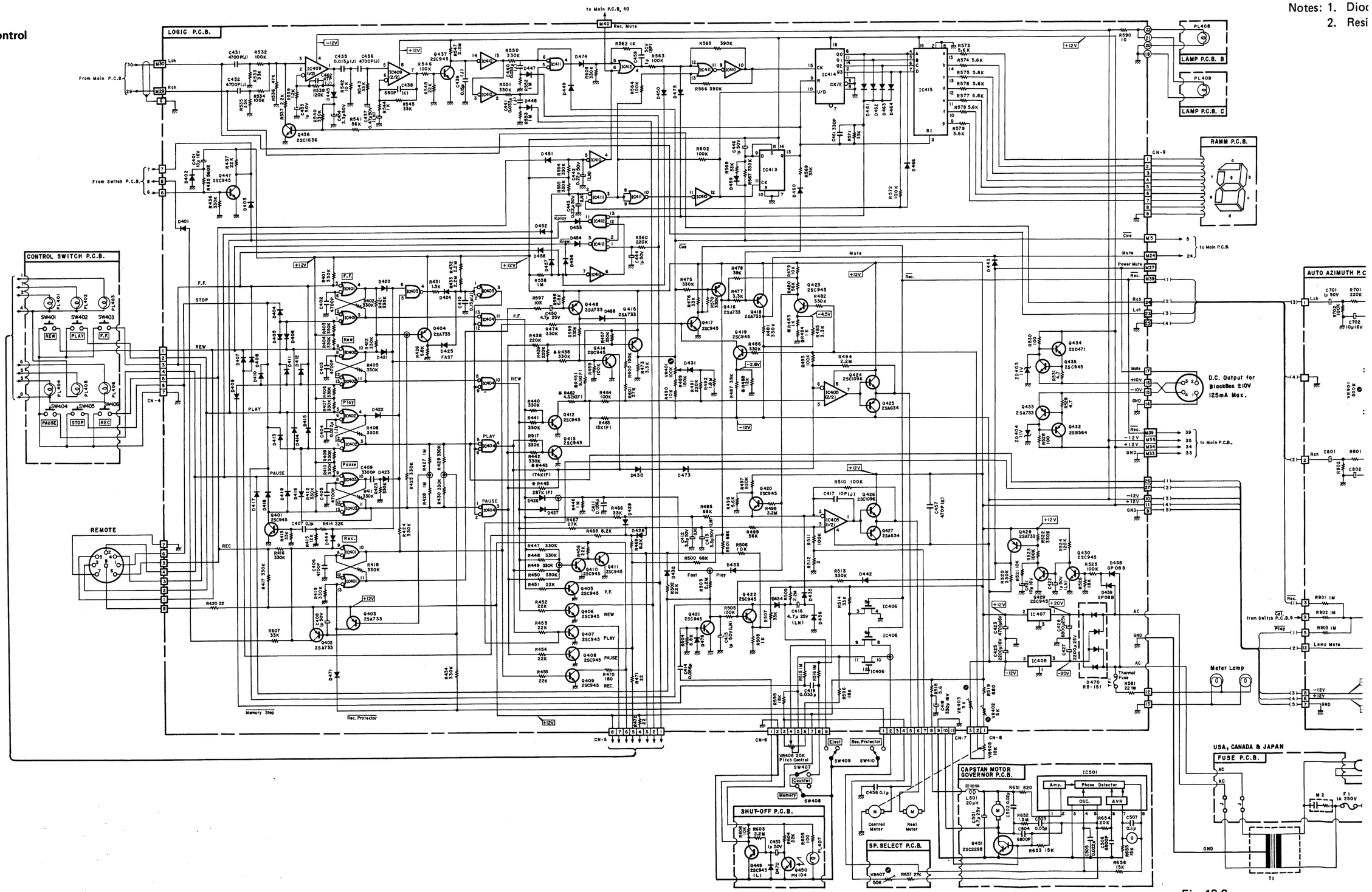


Fig. 13.2

Notes: 1. Diode is 1SS53, 1S953, or 1S1555 unless otherwise specified.
2. Resistor and capacitor marked with * show typical value.

IC Chart			
Reference Number	Description	Reference Number	Description
IC401,402,403	μPD4011C	IC410	μPD4049C
IC404,411	μPD4001C	IC412	μPD4071C
IC405,901,905	μPC4558C	IC413,903	TC4013BP
IC406	μPD4066C	IC414	TC4510BP
IC407	μA7812	IC415	TC5022BP
IC408	μA7912	IC902	RC4556D
IC409	RC4559D	IC904	TC4073BP

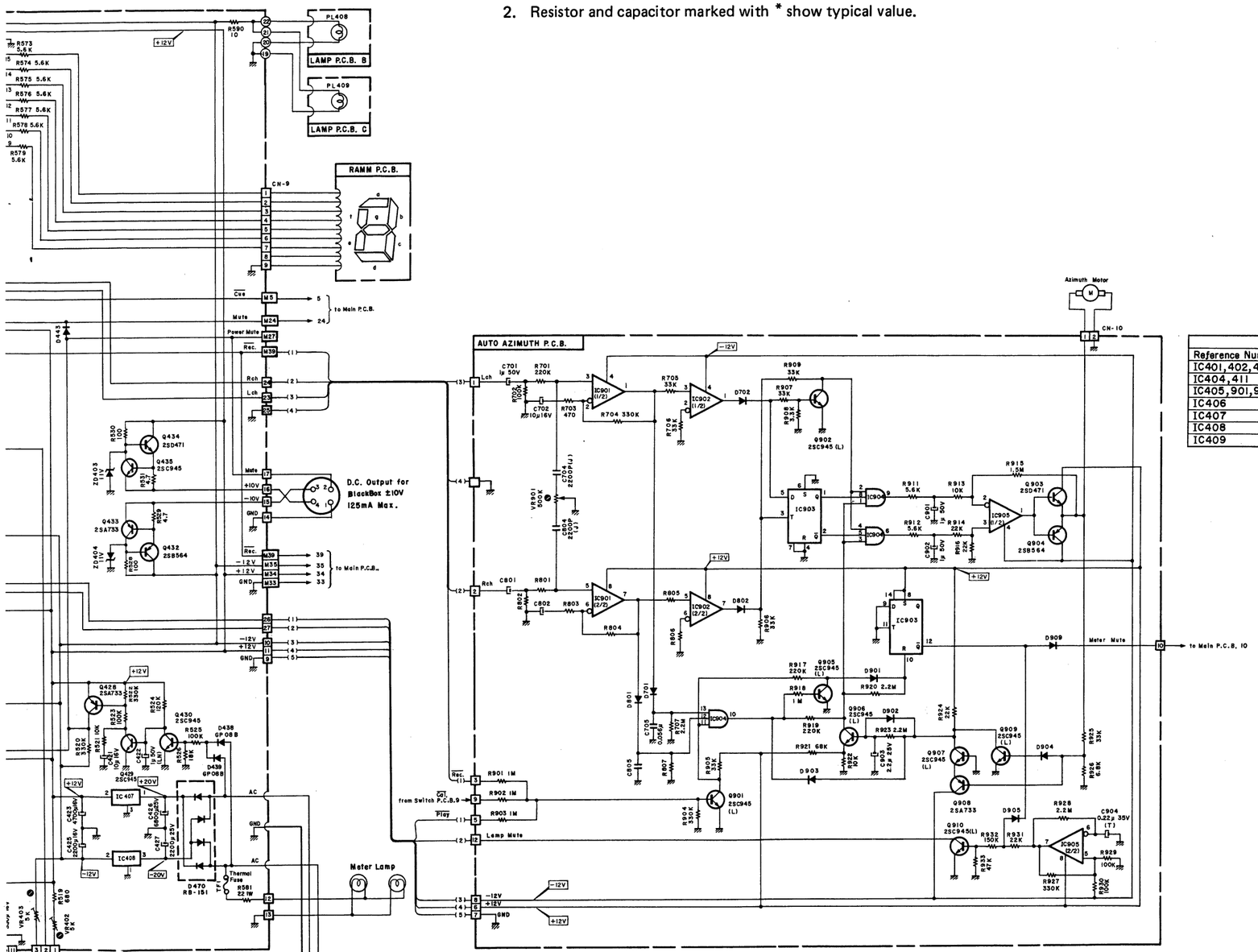


Fig. 13.2

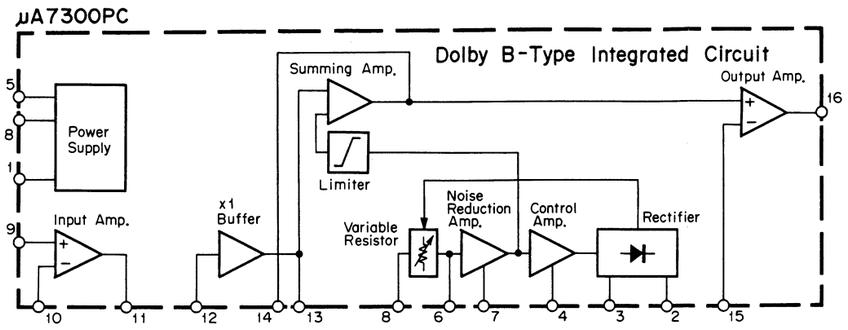


Fig. 13.3 Dolby NR IC μA7300PC

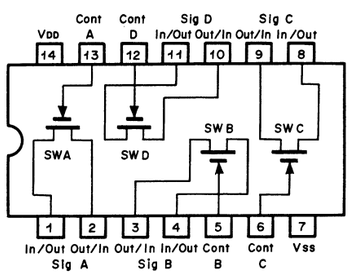


Fig. 13.4 Bilateral Switch C-MOS IC μPD4066C

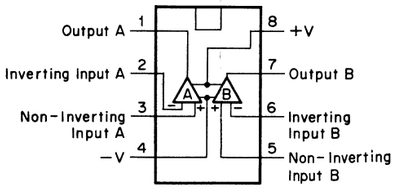


Fig. 13.5 Operational Amp. IC

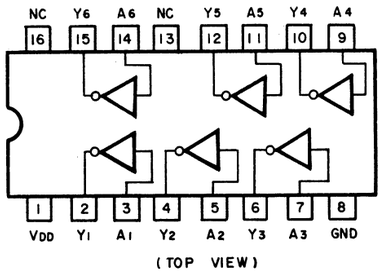


Fig. 13.6 Inverter C-MOS IC μPD4049C

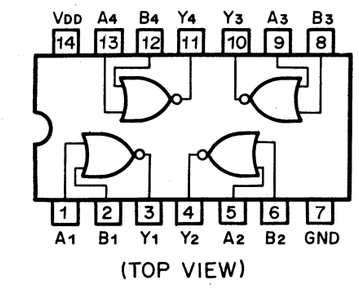


Fig. 13.7 NOR Gate C-MOS IC μPD4001C

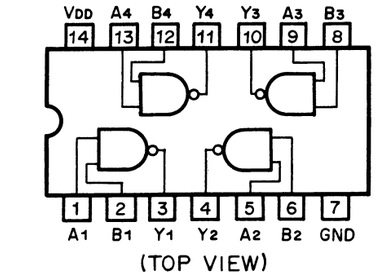


Fig. 13.8 NAND Gate C-MOS IC μPD4011C

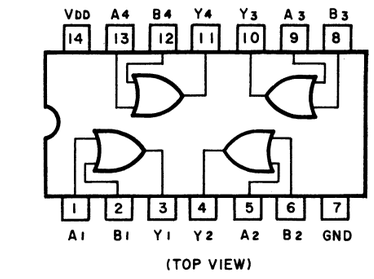


Fig. 13.9 OR Gate C-MOS IC μPD4071C

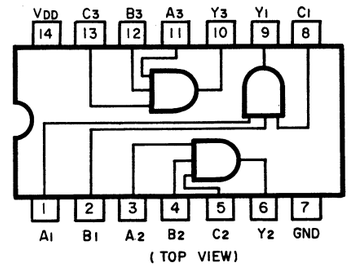


Fig. 13.10 AND Gate C-MOS IC μPD4073C

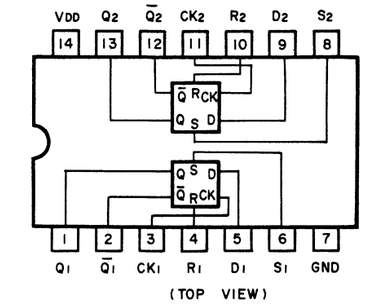


Fig. 13.11 D-Type Flip-Flop C-MOS IC TC4013BP

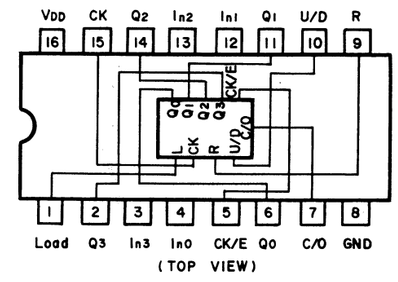


Fig. 13.12 BCD Up/Down Counter C-MOS TC4510BP

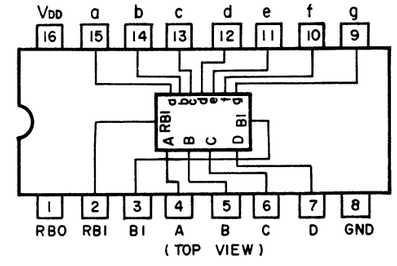


Fig. 13.13 BCD to 7-segment Decoder/Driver C-MOS IC TC5022BP

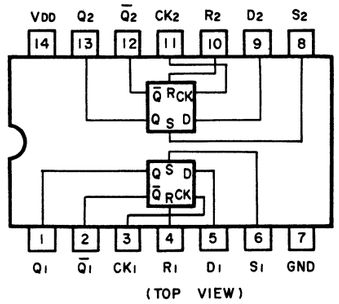


Fig. 13.11 D-Type Flip-Flop C-MOS IC TC4013BP

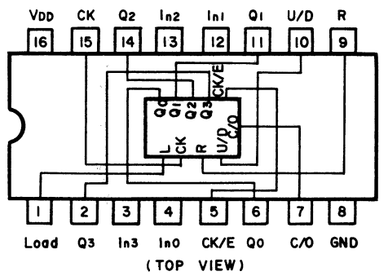


Fig. 13.12 BCD Up/Down Counter C-MOS TC4510BP

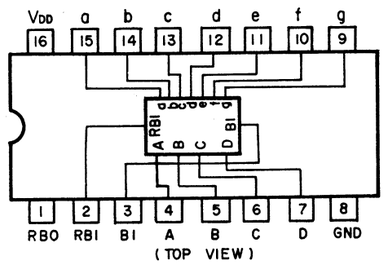


Fig. 13.13 BCD to 7-segment Decoder/Driver C-MOS IC TC5022BP

14. SPECIFICATIONS

Power Source	100, 120, 120/220-240, 220 or 240 V; 50/60 Hz (according to country of sale)
Power Consumption	27 W max.
Tape Speed	1-7/8 ips. (4.8 cm/sec.) ± 0.5%
Frequency Response	10-22,000 Hz ± 3 dB (–20 dB rec. level, ZX tape)
Signal-to-Noise Ratio	Better than 66 dB (IHF-A WTD RMS, ref. 400 Hz, 3% THD, w/Dolby NR, ZX tape, 70 μsec EQ)
Total Harmonic Distortion	Less than 0.8% at 400 Hz, 0 dB w/ZX tape Less than 1.0% at 400 Hz, 0 dB w/SX, EX-II tapes
Wow-and-Flutter	Less than 0.08% WTD peak, 0.04% WTD RMS
Erasure	Better than 60 dB below saturation level at 1 kHz
Separation	Better than 37 dB at 1 kHz, 0 dB
Crosstalk	Better than 60 dB at 1 kHz, 0 dB
Bias Frequency	105 kHz
Input	50 mV, 50 k ohms
Output	1 V (400 Hz, 0 dB, output control at max.) 2.2 k ohms
Headphone Output	45 mW (at 400 Hz, 0 dB, 8 ohms)
DC Output Jack	±10 V DC, 125 mA max.
Dimensions	482(W) x 143(H) x 340(D) millimeters 19(W) x 5-5/8(H) x 13-3/8(D) inches
Approximate Weight	9 kg. 19 lb. 13 oz

- Specifications and appearance design are subject to change for further improvement without notice.
- Dolby NR under license from Dolby Laboratories.
- The word "DOLBY" and the Double-D-Symbol are trademarks of Dolby Laboratories.